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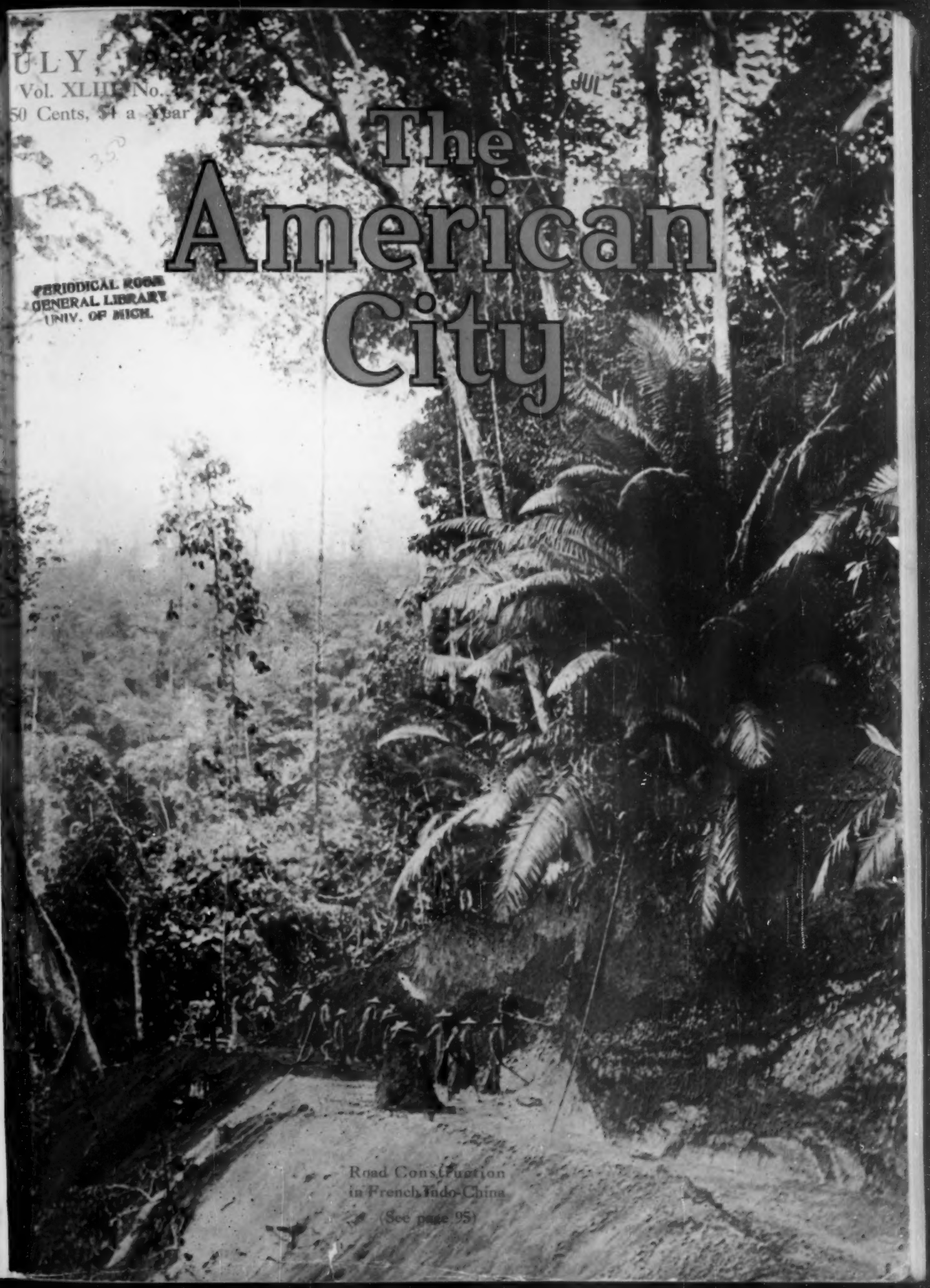

Road Construction
in French Indo-China

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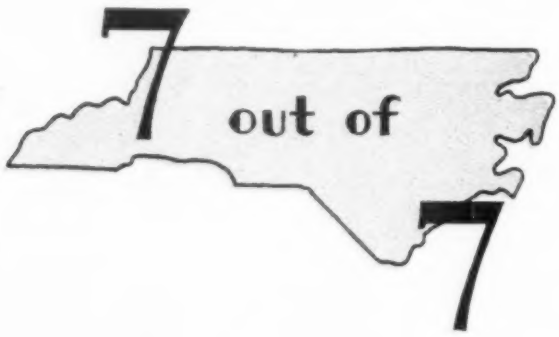

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In THE MUNICIPAL INDEX (an 850-page annual volume) readers will find much material, including articles, lists and bibliographies on a wide variety of municipal and civic subjects, not published in the monthly issues of THE AMERICAN CITY

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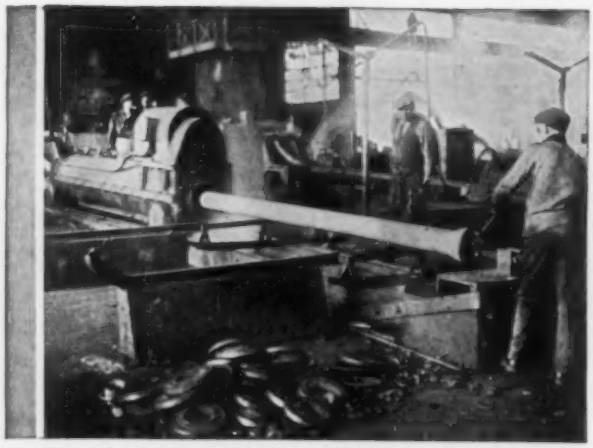
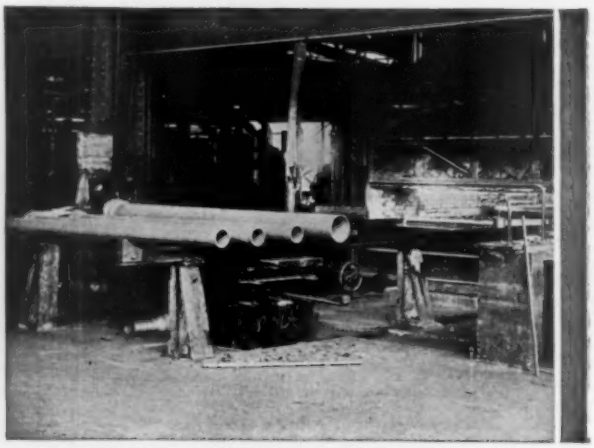


As soon as the pipe is formed in the mold, the bell is secured by a locking device and the deLavaud machine moves slowly backward.



Immediately after coming from the machines, deLavaud pipe is placed in a furnace where accurately controlled heat uniformly anneals every length.

combine to give strength and flexibility to deLavaud pipe

THERE are two fundamental reasons for the strength and flexibility of deLavaud pipe metal. The first reason is the centrifugal method of casting in the water-jacketed deLavaud machine.

In this machine, the iron is cast under a pressure which drives out impurities with a force many times greater than gravity. This pressure brings about an unusually dense metal structure.

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UNEMPLOYMENT and Other Problems for MAYORS AND CITY MANAGERS

Does Performance Match Promise in the Pushing of Public Improvements?

DURING the present widespread business depression, the importance of speeding up public works has had repeated emphasis by the President of the United States, the governors of several states, and many mayors and other leaders in local government. Jobs which will create needed municipal or county improvements have been widely proclaimed as preferable to bread lines or doles.

That much good has resulted, there can be no doubt. But reports which are reaching THE AMERICAN CITY from manufacturers of public works equipment and materials indicate that too often contemplated projects have failed to materialize in contracts awarded.

The bright side of the picture is presented in an announcement of the Department of Commerce on June 12, based on figures for 37 states reported by the F. W. Dodge Corporation. According to this statement, construction contracts for public works and public utilities during the first five months of 1930 totaled $588,000,000, a gain of 21 per cent over last year, and 35 per cent over the average for the past five years. These are imposing figures, but they seem far from a possible maximum when compared with the approval by the Board of Estimate and Apportionment of the City of New York at a single meeting last month of a $217,000,000 extra-budget program.

Optimistic predictions that prosperity would return by the spring or summer of 1930 have not been realized. June has witnessed the worst stock market slump of the year. Optimism was not increased by the announcement of the National Automobile Chamber of Commerce that production of the automobile industry for the first five months of 1930 was 31 per cent under the same period of last year.

Unless vigorous measures are speedily taken, many a city will have a distressing number of its citizens engaged in vain hunts for jobs during the coming winter. Something more satisfying than pity is needed—and something more imaginative than increased poor relief.

If war were declared tomorrow, millions of men would be drafted for deeds of destruction—and we should all be prosperous. Can we not draft them for works of construction—and all be more prosperous? The need for vigorous local leadership is acute.

Are your city and county doing their utmost?

A Dead Mayor—and a Live Problem

WHEN a mayor who has been especially active in urging grade-crossing elimination forfeits his own life on an unguarded crossing, the highway safety problem comes home with acute force to the municipal officials of America. What was left of the automobile in which Anthony M. Ruffu, Mayor of Atlantic City, and three friends were killed on June 23, is here shown. According to newspaper reports, this railroad crossing at Absecon, about 8 miles from Atlantic City, was unguarded except for warning signs and bell.

With widespread unemployment crying for relief, and traffic accidents continuing to multiply, could there be a better time than right now for organizing vigorous campaigns for the abolishing of many existing grade crossings, and for the more adequate protection of many others?

WHERE ATLANTIC CITY'S MAYOR MET HIS DEATH

Five-Day-Week Summer Schedule for City Departments of Revere

A YEAR ago the city of Revere inaugurated a system of a five-day week during the summer months of June, July, August and September. The experiment met with so much satisfaction that it is being repeated this year. In a recent letter to THE AMERICAN CITY, Mayor Andrew A. Casassa says:

"This does not necessarily mean that all city departments are closed on Saturday to the general public. We keep a skeleton force in all departments—clerks and officials alternating in their Saturday mornings off. In the Public Works Department an emergency crew is kept for water breaks and any emergency that may arise. In order to accomplish this five-day week, a half-hour a day is added to the daily hours, making up the three hours ordinarily spent in work on Saturday morning. There is no question in my mind but that the five-day week is one of the solutions of our employment problem and one that should be given serious consideration throughout the country. Revere, I believe, is the only city in Massachusetts that has adopted the five-day week."

Must Prisons Burn While Legislators Dispute?

THE cruel catastrophe at the Ohio State Penitentiary gave dramatic testimony to the wretched conditions existing in many of our prisons. There are half a dozen older prisons where the Columbus tragedy could any day be repeated. Others are almost as bad. Chairman Wickersham of the President's Law Observance and Enforcement Commission has called attention to this condition. Though the Commission is most interested in reform of our system of prosecution, it cannot overlook the fact that meanwhile: "Men and women are being sent to prison—to antiquated, overcrowded, unsanitary and unsafe institutions, under conditions which cry aloud to high heaven for immediate improvement. I would not have the construction of new, fairly decent and adequate prisons wait upon the reformation of the penal laws, and other holocausts, such as that of Columbus, Ohio, be added to the many manifestations of improper conditions which have been occurring in many parts of the country, while men dispute in legislatures and public meetings and in the press, over the most sound and sane methods of dealing with crime."

Below: A 1,500,000 gallon Horton ellipsoidal bottom tank at Royal Oak, Michigan. Note the comparatively short distance between the top and bottom of the tank proper. At left: 500,000 gallon Horton ellipsoidal bottom tank at Natchez, Miss. Horton tanks are built up to 2,000,000 gallon capacities; or even larger should the need arise.

The TYPE of elevated water tank is also important

IN order to make sure they are approving the most economical and satisfactory elevated water storage possible, city officials should consider these vital points:

—the amounts of elevated storage. The correct quantity may be much greater than the population size would indicate.

—the type of storage. This affects the first cost of the system and the operating costs.

Engineering studies in many cities have proved that LARGE elevated storage in Horton ellipsoidal bottom tanks has been the logical answer to both considerations. The shallow depth design of tank gives the least variation in water pressure—which means the lowest pumping cost. It also means that the entire capacity of the tank will be available at a satisfactory pressure.

Horton tanks have other advantages also, which we are glad to explain to interested parties. Get in touch with our nearest office for data on water systems and estimates on a Horton tank to meet your requirements.

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Birmingham.....1502 Fiftieth St., N.
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San Francisco.....1033 Rialto Bldg.
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PURE WATER—MAN'S GREATEST NEED

WATER SUPPLY AND PURIFICATION

Advantages of Chloramine Treatment of Water

THE ammonia-chlorine or chloramine process of water treatment, which has been found successful abroad and which has been recommended by such bodies as the British Ministry of Health, has now been installed in various communities in the United States for the purpose of improving the drinking-water supply.

After many tests, the claim is made that the ammonia-chlorine treatment not only is a more efficient bactericide than chlorine alone, but also rids the treated water of odors and tastes which are frequently found in municipal supplies. Ammonia-chlorine treated waters also remain free from bacterial aftergrowths over long periods of time. Another important feature in favor of the process is its power to eliminate objectionable chlorinous and chlorophenol tastes and odors incident to the use of chlorine, and it also makes for economy in the use of chlorine.

In addition, it is believed that the new process will be found valuable in other fields, such as the purification of water in swimming pools and in several industrial processes subjected to the formation of slimes.

In this process the water is first treated with ammonia by introducing the ammonia into the water by means of an ammoniator, which is essentially the same as a chlorinator except that its parts are made of materials impervious to the action of ammonia. It would seem that preammoniation is desirable to obtain the best results, and some time is allowed to elapse between the introduction of ammonia into the water and chlorination. The ammonia and chlorine react to form chloramines in the water.

Among the many municipalities now employing this treatment of their supplies are Greenville, Tenn.; Springfield, Ill.; Lancaster, Pa.; Media, Pa.; Phoenixville, Pa.; Philadelphia, Pa.; Burlington, N. J.; Bay City, Mich.; Cleveland, Ohio; Beaver Falls, Pa.; East Liverpool, Ohio; Allentown, Pa.; Hyattsville, Md.; Defiance, Ohio; Greenville, Pa.; and Warren, Ohio.

Operation of the Batavia, Ohio, Water-Softening Plant

THE operation of the Batavia softening plant has been a problem. The raw water is from the Little Miami River and is very changeable in character, necessitating frequent changes in the treatment. The hardness of the raw water varies from 60 to 230 p.p.m. At times, softening is unnecessary, but on account of the fact that the plant is in charge of a non-technical operator, it is deemed advisable always to treat the water to obtain causticity. This treatment is especially desirable during periods when the raw water is soft, because at such times it is highly polluted and the sterilizing action of the caustic alkalinity is maintained as protection for the consumers. Recarbonation is practiced. The normal carbonates are kept below 5 p.p.m. and are usually removed completely. No deposits have been noted in the distributing system, and the filter sand is clean after three years of operation.

Agitation of chemicals with the water in the settling tanks is effected by air pumped by an air-compressor. The same compressor is utilized for pumping carbon dioxide into the carbonation chamber. As it is not possible to agitate the tanks and apply carbon dioxide to the water at the same time, there is a tendency on the part of the operator to slight the time devoted to mixing chemicals with water.

Bacterial purification as well as softening is accomplished by chemical treatment. A factor of safety is introduced by employing the softening process, even though at times of high water little softening is effected. Ordinary coagulation and filtration without excess lime treatment could not produce a uniformly safe water under the conditions encountered at Batavia.

—Abstract from a paper read before the Eighth Annual Ohio Conference on Water Purification.

Removing Ice from a Water-Supply Intake

THE source of water-supply for the purification plant operated by the Essex Border Utilities Commission, Windsor, Ont., is the Detroit River. The plant is jointly owned by 9 municipalities and serves 120,000 people. Because of the constant movement of ferries between the Canadian and American shores, there is seldom an ice cover over the intake, which is located in 40 feet of water about 1½ miles upstream from the ferry crossing. Under certain conditions, however, frazil ice develops and adheres to the 8-foot bell mouth of the intake, causing partial or complete interruption of flow.

In designing the low-lift pumping-station, the possiblity of such trouble was recognized, as it has occurred in other intakes along the Detroit River. The piping from the pumps was so arranged that pressure could be applied to the intake, in the belief that the ice which had formed at the mouth could be blown off. Frazil ice has appeared in this intake on three separate occasions in such quantities as to cause almost complete interruption of service. In each instance, immediate relief has been secured by reversing the flow in the intake. Large masses of ice conforming to the contour of the pipe would then come into the suction well. The average time required for the operation is 25 minutes, during which period the reservoir is being drawn upon.

Frazil ice did not appear during the past winter, although, from previous experience, conditions were favorable for its formation. Continued cold, not common to this district, caused Lake St. Clair and the upper part of the Detroit River to freeze over and to remain covered with ice. This ice cover prevented the formation of frazil ice in that section of the river from which the supply is drawn.

J. CLARK KEITH,
Chief Engineer, Essex Border Utilities Commission, Windsor, Ont.

Oklahoma City Benefits from Rate Reduction

DESPITE a water-rate reduction of 20 per cent, the Water Department of Oklahoma City, Okla., found that its maintenance costs during the last year were reduced 1.2 cents per 1,000 gallons. Its available daily supply was increased by 25,000,000 gallons, by the construction of a 54-inch reinforced concrete conduit line. To top off with, the total revenues of the Department were increased 4.9 per cent.

Group Water-Mains in Bohemia

IN Bohemia, the grouping of parishes and townships for the construction of joint water-supplies is voluntary. In this matter the greatest advantage lies in the linking-up of large communities or towns of some financial strength with others that could not think of constructing a water-supply for themselves.

There are some sixty such joint water-supplies in Bohemia, and since the war the expenditure on such construction has amounted to approximately 200 million crowns.

A typical example of how it is possible to arrange a group water-supply for a poor mountain district is provided by the Orlicka group, in which eight parishes have participated. The supply has been planned for a population of 7,155 and cattle numbering 5,330. The parishes are agricultural, with a developed dairy trade on cooperative lines and with cottage industries. The consumption of water for the future is estimated at 129,600 gallons per day. The distribution pipes have a total length of 41 miles and a diameter of 1.2 to 5 inches. Of these pipes, a length of 33 miles is of cast iron, and the remainder is of steel. The number of hydrants is 108 and there are 6 reservoirs. The total outlay was 6 million crowns. The scheme had the support of the Ministry of Agriculture, the Ministry of Health, and the province of Bohemia.

—Public Service Technical Reports, No. 18.

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(Appointed 1918)

AMIEL A. REICHSTEIN
Water Superintendent
Fairfield, Iowa
(Appointed 1928)

HORACE J. COOK
Supt., Auburn Water District
Auburn, Maine
(Appointed 1922)

LEONARD N. THOMPSON
General Supt. & Engr., Water Dept., St. Paul, Minn.
(Appointed 1928)

E. J. AUSTIN
Supt. of Water Works
Hoquiam, Wash.
(Appointed 1927)

WHO'S WHO IN WATER SUPPLY

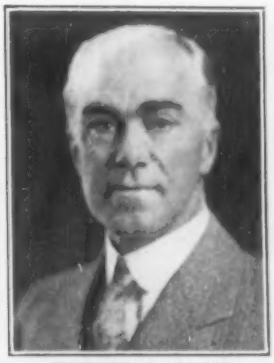
The 31st of a Series of Portraits of Water Works Officials Which Has Appeared Monthly Since January, 1928

FRANK WATERS
Supt. of Water & Light
Madison, N. J.
(Appointed 1929)

CLYDE L. JENKEN
Supt. of Water Works
Santa Ana, Calif.
(Appointed 1927)

EDWARD VANDERVLIET
Supt. of Water Works
Wallington, N. J.
(Appointed 1930)

PHIL F. COMSTOCK
Supt. of Water Works
Mankato, Minn.
(Appointed 1921)



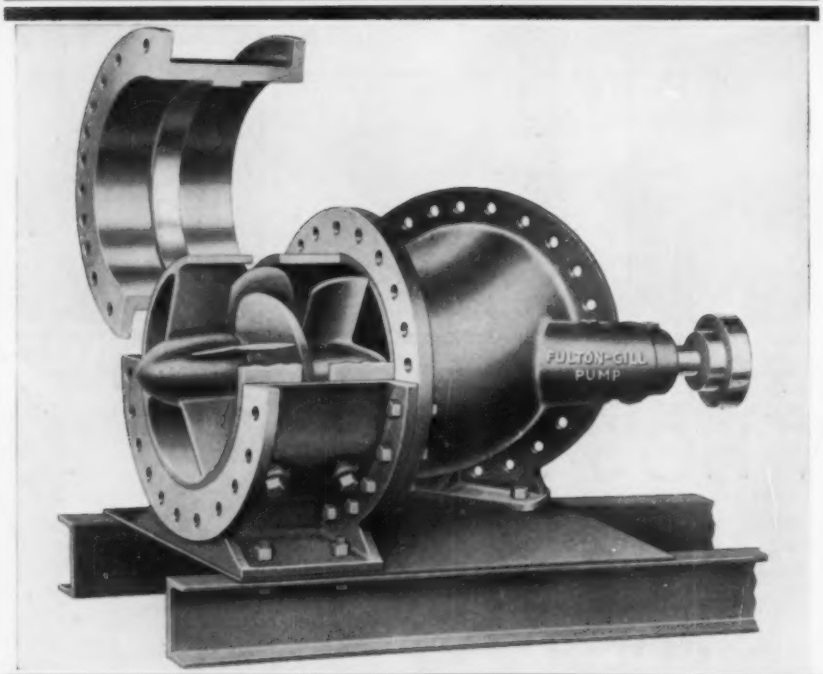
HOWARD S. MORSE
Gen. Mgr., Indianapolis Water Co., Indianapolis, Ind.
(Appointed 1925)

C. E. SCHOLL
Supt. Water & Light Plant
New Castle, Ind.
(Appointed 1929)

BEN F. MYERS
Operating Engr., Water Works
Marshall, Texas
(Appointed 1900)

THOMAS B. HEUBI
Supt. of Water Works
Fredonia, N. Y.
(Appointed 1926)

FRANKLIN HENSHAW
Mgr., Scarsdale Water Dept.
Scarsdale, N. Y.
(Appointed 1921)



Cross-sectional view of Fulton-Gill Pump showing simplicity of construction. Can be furnished in either vertical, horizontal or inclined types.

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In pumping services of all kinds where head is low or moderately low, Fulton-Gill Screw Pumps will do the job efficiently and with greater economy.

Lower in first costs than the average pump, they do not lose their efficiency with long service. They are simple in design and construction—only three working parts, so arranged that adjustments can be easily made. The impellor and guide veins are so designed to give an axial flow of liquid free from eddies. The Pump itself is no larger than the pipe through which the liquid is pumped.

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Consult our Engineering Department on your pump requirements. Their many years of experience will assist you in getting the right pump at the right price. Fulton Iron Works Company, Gambleton and Delaware, St. Louis.

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Sewage Treatment Means Clean Streams

SEWERAGE AND SEWAGE DISPOSAL

New Plants Make Plans for Sludge Disposal

THE sewage treatment plant at Waukesha, Wis., was put into operation only last October, so that there has been no sludge to dispose of as yet. According to A. R. Schuh, City Engineer, it is planned to remove some of the sludge some time in July. At present, tests are being made on nitrogen content, and from these determinations it is expected to know whether or not it will be possible to obtain any revenue from the sale of the sludge.

The city of San Antonio, Texas, expects to put its new sewage treatment plant in operation in June, 1930. The present plan for the disposal of the treated sludge is to pump it into earth lagoons, but plans are in contemplation to reclaim it as a fertilizer and develop the country around the plant for truck gardening, according to the report of C. M. Tobin, Superintendent of the plant.

Sludge Used for Planting Around Disposal Works

THE sewage treatment plant of the Sanitary District of Elgin, Ill., was placed in operation in the fall of 1926, so that the problem of sludge disposal did not appear until the summer of 1927, and was solved in an interesting manner.

A new plant for which landscaping has not been included in the contract is generally left with very uneven grades, with gravel and rocky soil covering all areas adjacent to the new structures. Such was the condition which existed at Elgin, and plans were immediately started for grading and landscaping with the first available sludge.

As operation was begun in the fall, the first sludge was obtained during the summer of 1927, when 615 cubic yards of dried sludge was removed from the drying beds. This was dried on sand beds, loaded into sludge cars of the industrial railway, and hauled by locomotive to a loading platform, from which it was dumped directly into trucks and hauled to the required location. It was then placed around the buildings and roughly graded. This method of handling and hauling the sludge has worked very satisfactorily and is still in use at the plant. All sludge has been allowed to lie over during the winter so as to thoroughly disintegrate and compact before any planting is done.

During 1928 an additional 1,000 cubic yards was used about the plant in further beautifying the plant grounds. In 1929, 1,369 cubic yards was obtained, about 800 cubic yards of which was used about the plant. The rest was stock-piled to disintegrate and crumble before being hauled and graded on the grounds around one of the Sanitary District pumping-stations which was located on a business street, as it was felt that complaints would be forthcoming if odors should arise in this locality.

Numerous places about the plant have been filled with from 2 to 3 feet of sludge, and grass seed sown on the surface, resulting in a very luxuriant growth of grass which necessitates cutting twice as often as grass sown on a normal earth to which small amounts of sludge have been added.

No revenue has been obtained from the sludge, as it has not been made available to the public. One of the largest nurseries in the world, as well as a number of florists, have tried it, and a market will be readily available when the Sanitary District no longer needs it for its own use. It is felt that 75 cents a cubic yard can be obtained when the plant is ready to sell the sludge.

E. E. SMITH,
District Superintendent, Sanitary District of Elgin.

No Revenue Received for Sludge

ROBERT L. FOX, City Engineer of Bethlehem, Pa., reports that the city has no general sewage disposal plant, the sewage being passed through two Dorr sewage screening plants. The screenings are placed in cans and removed by contract at 25 cents per 3½-cubic-foot can, hauled about 2 miles and buried in trenches, the cans being washed by the contractor.

Sludge from the treatment plant at Aberdeen, S. Dak., is disposed of by spreading it on unused ground near the plant, according to James G. Colahan, Building and Wiring Inspector.

According to Borough Manager Lowell W. Monroe, Ellwood City, Pa., has not as yet derived any revenue from the sale of sludge, as it is used for fill near the plant.

Holland, Mich., has not as yet made any attempt to secure a revenue from the sale of sludge. Roy B. Champion, Superintendent of the Board of Public Works, says that it has rather been the idea to let its value become established as measured by the demand for it. At present it is given away for the hauling. The men load the sludge into small steel trucks which run over the beds on industrial tracks. The user then reloads it into his own wagon or truck. As soon as there is a waiting list, a price will be named which it is hoped will at least take care of the labor required to unload the beds.

Odor Control at New Castle, Pa.

THE sewage treatment plant at New Castle, Pa., serving a population of approximately 50,000, consists of a manually cleaned rack screen with 1-inch clear spacing, six Imhoff tanks designed for gas capture, and open sludge beds.

Since the works were put into service in October, 1926, the most serious source of odors has been the exposure, accidentally or otherwise, of partly digested sludge on the open beds during the initial stages of operation. With the securing of good digestion conditions in the tanks, this source of odors has been removed, as well as the escape of odorous non-combustible gases which accompanied this digestion.

The methods now used to combat odor are those incidental to good housekeeping. The success in abating odors and making the property attractive to visitors is dependent upon the degree to which cleanliness is practiced in the various operations. The material caught on the rack screen, averaging about 5 cubic feet daily, must be removed promptly in warm weather, trenched and covered with earth to avoid odors and fly breeding. The surface of the Imhoff tanks must be skimmed daily, the walkways and walls hosed down, and the channels, weirs, slopes and slots kept free from stranded solids.

During the summer months there is a tendency of the sewage in passing through the tanks to become septic, resulting in release of hydrogen sulfide at the effluent weirs and in the effluent channel. This may be relieved to some extent by partially backflooding the effluent channel and reducing the turbulence of the discharge. So far, chlorine has not been applied to the trunk sewer or to the tank influent as a corrective measure.

The gas vents at New Castle are covered, and all the gas produced, amounting to 15,000 to 50,000 cubic feet daily, is burned either for heating in winter time or at an outside waste burner. The burning of the gases of digestion, instead of allowing them to escape in the atmosphere, is believed to be a factor in reducing odors at this plant.

In the main building it is found necessary to keep the pump sump cleaned if odors are to be avoided. It has been found also that organic solids brought into the buildings on the feet of workmen are apt to cause an odor in the building offensive to visitors, unless floors are constantly kept clean. For the same reason, work clothes used by the attendants are not kept in the main building.

The improvement of the sewage works grounds by care of the lawn, planting of flowers and shrubbery has much to do with the impressions regarding odors which are formed by visitors.

G. H. HOSKINS,
Assistant City Engineer.

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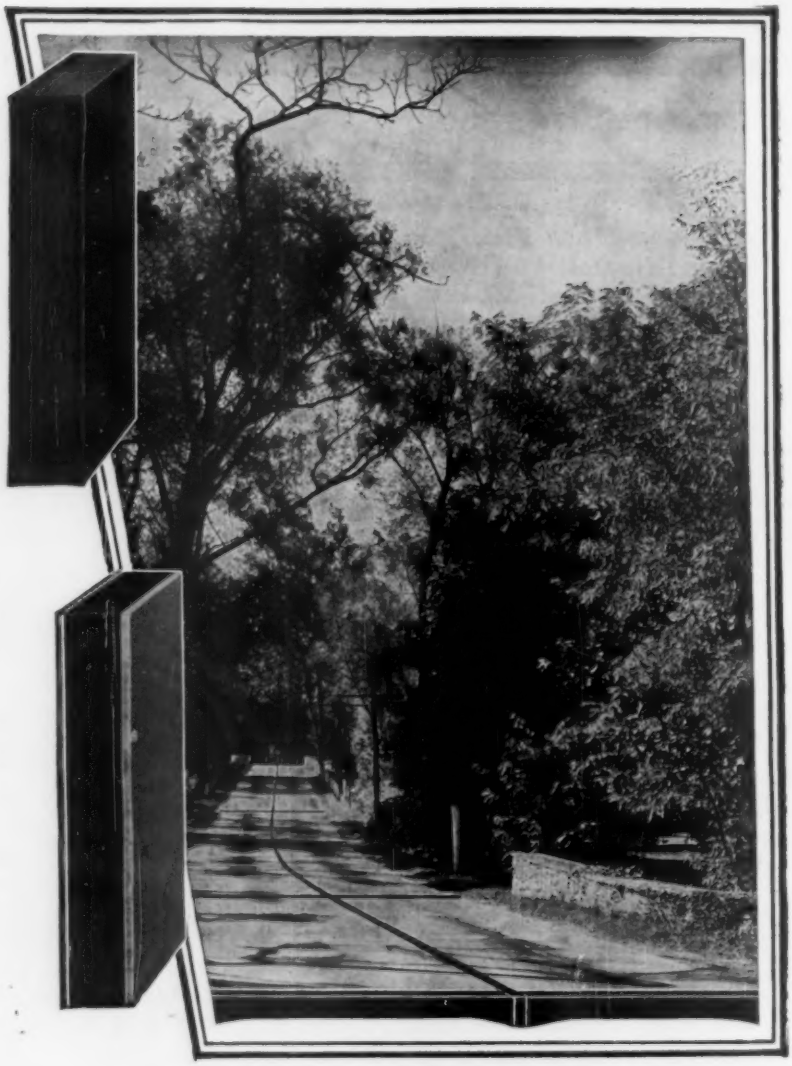
VISION!

One of the greatest authorities in this country on concrete highway engineering says:

"—And I would put expansion joints every 35 feet, with some kind of expansion joint filler that would really take care of temperature and moisture variations."

Failures are *built into* roads and streets when no provision is made for "really taking care of temperature and moisture variations."

And, without intent, the quotation describes to the letter the performance of Servicised Expansion Joint.



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What Are Servicised Expansion Joints?

They are premoulded safety strips which protect concrete structures against the destructive results of stresses set up by natural causes.

They are produced from specially refined asphalts to which fibers are added for elasticity and reinforcement, then formed hot under pressure into the required shapes.

They do not deteriorate in stock or on the job and can be handled as easily as a board.

By protecting municipal structures of the rigid type against cracks and bursts due to rapid expansion and contraction, the money is saved for more municipal construction.

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Construction and Maintenance

ENGINEERING AND HIGHWAY DEPARTMENTS

Effect of Heavy Trucks on Street Pavements

A STUDY of the effect of heavy trucks on street pavements was made in 1920 by the New York State Bureau of Municipal Information. This study showed that in twenty cities considerable damage was done to the pavements of city streets on which heavy trucks were accustomed to run, while ten cities found no noticeable damage to pavements. The consensus of opinion of the city engineers of thirty cities indicated that a thicker concrete base would be necessary to stand the increasing use and weight of motor trucks, although heavy trucks had not then been used long enough to permit any accurate statement regarding their effect on pavements.

In November, 1929, similar data were requested from the city and village engineers of 60 New York State municipalities, to ascertain what effect a longer experience in the use of heavy trucks indicated. Forty-five municipalities reported more or less serious damage to older pavements by heavy trucks, five reported no damage to the older pavements, and ten reported no noticeable damage to newer pavements which had an 8 to 9-inch concrete base. Most of this damage resulted from trucks with solid tires, those with pneumatic tires not being injurious, and especially noticeable was the serious damage resulting from the use of chains on trucks with hard tires. On grades the application of breaks on trucks caused a pushing-forward of surface blocks.

New York City reported that the increase in the size and load of trucks, trailers and busses which has taken place within the last few years has tended to subject the pavements and other supporting structures to loads for the carrying of which they are not, and in some cases cannot be, designed.

The City Engineer of Rochester reports that where the pavement base and subsoil have been of insufficient strength to support the weight and impact effects of heavy trucks, rapid deterioration has taken place on certain streets on that side of the street upon which the loaded trucks operate, whereas the side upon which the trucks return empty has not been damaged seriously. The city is increasing the standard thickness of concrete foundations for asphalt pavements from 6 to 8 inches on heavy-traffic thoroughfares. For concrete pavements on heavy-traffic streets a 9-inch pavement is used instead of the 7-inch thickness used on light-traffic streets. More attention is also being paid to the character of the subsoil, as studied through laboratory tests and observation, often resulting in the use of sub-base courses under concrete and penetration macadam pavements in addition to other standard designed courses.

Prompt Repairs Keep Bridges in Service

HIGHWAY bridges require regular maintenance just like other parts of a highway, and such work is necessary and profitable. Most of the bridges taken into the Minnesota state highway trunk system in 1921 were not designed to carry modern motor traffic. They could not be rebuilt all at once, so the State Highway Department organized a bridge maintenance division and set about to keep the bridges in service until new ones could be built. All bridges were given regular inspection, and repairs were made promptly when needed. In spite of the heavy traffic, there have been only nine failures among bridges taken over by the state in 1921. No loss of life occurred in any bridge failure, and all the failures were due to excessive loads or to vehicles striking the bridge support.

Of the bridges taken over by the state in 1921, 737 are still in use. Since that date 575 bridges have been built by the state, with a total length of 35,946 feet and at a total cost of $6,853,155. A survey recently completed by the bridge maintenance division shows that the total investment in the 1,312 bridges, old and new, now in use in the state highway system is $10,002,426. Bridges under 10 feet long are not included.

There are 26 bridges which are considered unsafe for the maximum load of 14 tons permitted by law, and lesser load limits, ranging from 2 to 10 tons, have been posted on the bridge approaches. The survey shows five bridges less than 16 feet wide, 76 have a 16-foot roadway, 254 are 18 feet wide, 412 are 20 feet wide, 163 are 24 feet wide, and 402 are over 24 feet. "Narrow bridge" signs are posted about 300 feet in advance of all bridges 16 feet wide or less.

The survey shows a total of 17.8 miles of bridges in the trunk highway system. There is a bridge for every 5.3 miles of highway. The average cost of the bridges is $160.30 per lineal foot. The investment in bridges averages $1,429 per mile of highway. More than half, or 57½ per cent, of the structures are steel; 24 per cent are concrete, 10 per cent are wood, and 8½ per cent are railroad overheads of various types.

The oldest bridge in the system is the covered bridge on T.H. No. 58 at Zumbrota built in 1869. This is a wooden truss structure with a clear span of 116 feet. Loads are limited to 5 tons, and the 15-foot roadway is not adequate to modern traffic, but otherwise the bridge is in good condition. The report recommends that when a new bridge is built, the old structure be preserved as an historical monument.

One recommendation in the report is of special interest to county and township officials; namely, that 24 feet be made the minimum width of roadway on all bridges in the future. This recommendation has in mind the increasing popularity of snow removal on secondary roads in winter.

C. M. BABCOCK,
Commissioner, Minnesota State Highway Department.

The Test of a Low-Cost Road

THE test of a low-cost surface is met when the annual maintenance cost is less than the difference between the fixed charges on such a surface and that of a high type. For example, if a concrete surface costs $30,000 per mile and has a fixed annual charge of $2,400 per mile per year because of interest and sinking-fund requirements, and a low-cost surface requires $5,000 per mile with a fixed charge of $400 per mile per year, the low-cost surface is economical, provided the annual maintenance cost is less than the difference between the two or less than $2,000 per mile per year.

C. N. CONNOR,
Engineer Executive, American Road Builders' Association.

A New Motor Road in Italy

A RECENT issue of *Roads and Road Construction*, London, England, reports that work is about to begin on the Turin-Chivasso section of the great motor road between Milan and Turin, Italy. This section is about 12½ miles in length and is divided in two sections—the Turin-Settimo and Settimo-Chivasso roads.

An idea of the work involved may be gained from the fact that the Turin-Settimo section alone will require the construction of two bridges across rivers, two bridges over railways, and about one hundred other secondary operations, representing altogether a large amount of labor and expense.

The date fixed for the opening of the entire highway between Milan and Chivasso, approximately 68 miles, is October, 1932. It is expected that the ten projects on this section will be started by the end of April, allowing plenty of time for completion of the highway by the date set.

Patrol Maintenance for Gravel Streets

CHOTEAU, Mont., a town of 1,000 population, employs two men part time for street maintenance, using a horse-drawn Russell patrol grader and a truck on its gravel-surfaced streets. The appropriation for this work in 1928 was $480 and has been raised to $500 for 1929 and 1930.

JOHN T. MOORE,
City Engineer.

Plan Now To Give Your City Soft Water

Architectural beauty typifies benefits brought by pure, soft water to the health and happiness of citizens of Springfield, Illinois. This waterworks plant is the first and largest in Illinois to do, in one operation, these four things: 1. Filter the water; 2. Soften the water; 3. Remove the iron; 4. Recarbonate the water.

Plant designed by Burns & McDonnell Engineering Co., Consulting Engineers, Kansas City-Los Angeles

OF all municipal improvements none brings greater benefits--both from the standpoint of a city's investment and the health and happiness of its citizens--than plenty of pure, soft water.

The benefits of soft water are community-wide. The rapid increase in the number of municipal water softening plants is evidence of the wide recognition among superintendents, city officials and the public, that soft water is a necessary civic asset.

Nothing arouses civic pride like a supply of clear, sparkling water--free from odors, taste and bacteria. It is additional good policy for the water board to typify these desirable characteristics by erecting attractive as well as practical structures.

Cities operating filtration plants where the water is hard, would profit greatly by adding a softening plant at slight extra cost. Filtration plants now being designed should provide for softening as well as for purification. If the carbonates are high enough to justify a lime treatment, the lime will serve as a purifying as well as a softening agent, for lime is a most effective germicide.

Rely on LIME
-tested by time

When soft water is available, cities can attract new industries by assuring them at least 10% annual reduction in operating costs.

For every municipal dollar invested for water softening, citizens save many. The annual saving in soap alone will average three times the annual cost of softening the water with lime. Additional savings would be: decreased fuel bills of 5 to 10% due to scale-free water; reduced repairs to heater coils and replacement of plumbing fixtures; lowered laundry bills and cleaning costs for removing iron stains.

The National Lime Association offers its cooperation in furnishing interested officials full information.

NATIONAL LIME ASSOCIATION

An organization of leading lime manufacturers formed to encourage a better appreciation of the economic value of lime in all its uses.

148-A

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WHO'S WHO IN CITY & COUNTY ENGINEERING

One of a Series of Portraits of Engineering Officials Which Has Appeared Monthly Since April, 1928

ELMER W. PRINCE
City Engineer
Morgantown, W. Va.
(Appointed 1927)

W. B. CAUTHORN
City Engineer
Columbia, Mo.
(Appointed 1923)

JOHN M. YOUNG
City Engineer
Dallas, Texas
(Appointed 1928)

W. P. NORRIS
County Engineer, Page Co.
Clarinda, Iowa
(Appointed 1926)

A. A. RHOMBERG
County Engineer, Dubuque Co.
Dubuque, Iowa
(Appointed 1928)

ORIN E. METCALFE
City Engineer
Austin, Texas
(Appointed 1926)

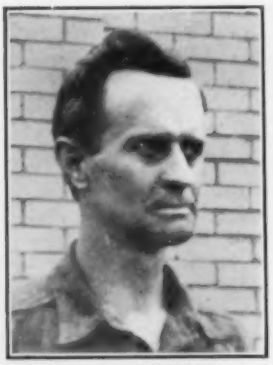
ARTHUR J. RHODES
City Engineer
Manhattan, Kans.
(Appointed 1929)

AUBERT J. MOWRY
County Engineer, Sheridan Co.
Hoxie, Kans.
(Appointed 1917)

RALPH D. AUSTIN
City Engineer
Little Falls, N. Y.
(Appointed 1926)

MONROE H. BRYANT
County Engineer, Jefferson Co.
Fairfield, Iowa
(Appointed 1919)

WALTER A. HEIMBUECHER
City Engineer
University City, Mo.
(Appointed 1913)



J. C. STEGNER
County Engineer, Pend Oreille
Co., Newport, Wash.
(Appointed 1919)

NAT McCANLESS
City Engineer
Ennis, Texas
(Appointed 1921)

K. V. HARRIS
City Engineer
Texarkana, Texas
(Appointed 1928)

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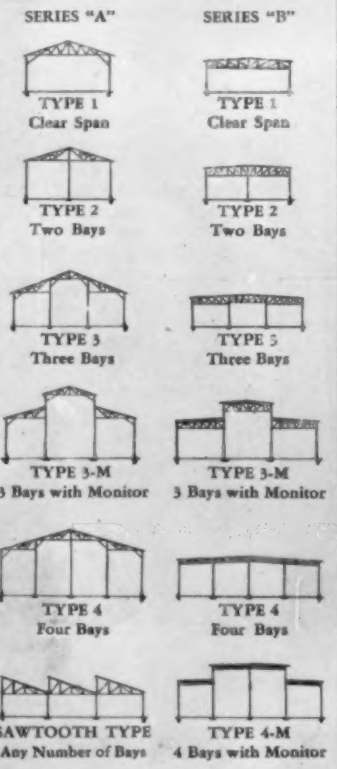

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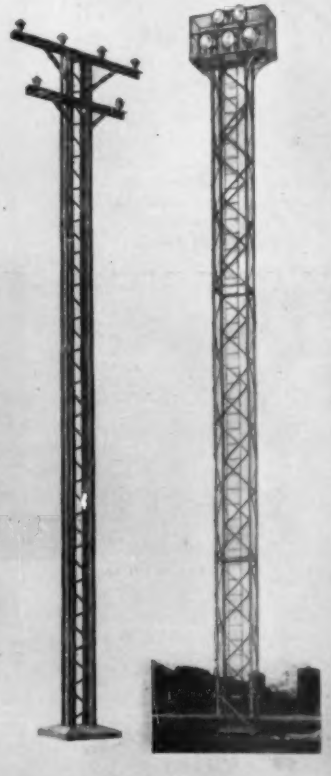

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Available in stock types and in special designs for hangars, fire houses, and industrial buildings.

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Insulated to any degree and water-proofed. Light in weight—fireproof—quickly erected—economical.

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Why not remember to mention THE AMERICAN CITY?

POPULAR PROGRAMS of PLAYGROUND and RECREATION DEPARTMENTS

"Rational Publicity" for Attractions

ROBERT CUSHMAN RICE, Supervisor of Recreation and Physical Education for the city of New London, Conn., says:

"1. Our recreational facilities consist chiefly of bathing beaches and as such some of the finest along the Atlantic Coast have always enjoyed great popularity. In recent years, however, in cooperation with the American Red Cross, we have established a system of beach patrol which by its very efficiency has made a name for itself and for the beaches as safe places to swim. It is a known fact that many people prefer to bathe at New London's beaches because they are well protected. Our playgrounds and concerts are always well attended, which fact may be attributed to rational publicity and an attractive program.

"2. Bathing. Good beaches, excellent bathhouses, which are free to the public in two of the beaches and low in cost at a third, are responsible for this.

"3. Special days are not held by the recreation department. On such holidays as Fourth of July, Memorial Day, etc., various patriotic organizations assume charge of programs and schedules. It is the attitude of the playground department that, parents not being employed normally on those days, the children should and do spend their time in company with their parents. This condition might not obtain in cities of larger size, or where there is an area of some size in which family life is not a matter to attract the children. New London is fortunate in not having such an area."

"A Complete Program"

William J. H. Schutz, Superintendent of Small Parks and Playgrounds, West Chicago Park Commission, Chicago, gives this account:

"1. The West Chicago Park Commission has a complete program for the year, consisting of 28 sports. These are conducted in the sixteen small parks and playgrounds, and this program is the medium by which we popularize our parks and play areas. Space is set aside for baseball, tennis, golf, boating, roque, football and skating, mostly in the large parks, of which we have four.

"2. I would say that baseball is still the most popular of the sports activities, to players as well as spectators. We have fifteen baseball diamonds which are occupied for scheduled games on Saturdays and Sundays. Permits are issued for them every two hours, on Saturday afternoons, and all day Sundays. Every diamond is in use, weather permitting. More than 200 teams have made application for permits so far this year for each week end. The attendance of spectators at these games usually runs up to 50,000 on a pleasant day. Tennis is the second most popular sport. The attendance during the past year was somewhat over 240,000. Golf ranks third, with attendance averaging between 160,000 and 174,000 on the two courses conducted by the West Park Commission. Boating is also quite popular with a large number. There is usually a long line waiting for boats on any holiday or Sunday during the summer months. Swimming is another very attractive sport, which draws both male and female attendance. As many as 800,000 have used these facilities in one year. We furnish towels, trunks, suits and lockers free. The pools open July 1 and close on September 1. The small park gymnasiums furnish adequate equipment for basket-ball, which is one of the many features during the indoor season. Besides basket-ball, gymnastics, calisthenics, tumbling and games are taught by experienced instructors, which interest young and old. Spectators for all activities have reached as high as two million for a complete year. Recreation for small children under 10 years is also provided. A segregated spot is usually selected where a wading pool and sand courts nearby are available. The instructor in charge of these children devotes her time to teaching them to make paper cut-outs, weave baskets, simple needlework, modeling, and arts and crafts work. The children enjoy a story hour occasionally. These instructions instill the creative instinct. Recreation for adults includes sewing, dancing, dramatics, needlework, and many other forms of recreation activity.

Putting APPEAL in Play

Recreation programs often have an individuality as distinctive as that of the municipality providing them. Interested to know how they get it, THE AMERICAN CITY recently asked three questions of all Park and Recreation Departments:

1. What means has been found most successful in popularizing your parks and play areas?

2. What features of the park and recreation programs have proved most popular with people of all ages?

3. Does the Park or Recreation Department sponsor special "days" such as are very popular in some places?

Replies received from all parts of the country, and from municipalities of all sizes, are exemplified by the statements on this page (and on corresponding pages of the May and June issues). Further interesting details upon the whole return will be given in August.

"3. Appropriate exercises are held at all parks on holidays such as Decoration Day, Flag Day, Independence Day, Labor Day, Hallowe'en and Christmas. We also conduct a music festival each year, where as many as 1,300, who have taken part in studies of vocal and orchestral work, demonstrate their ability. These music instructions are furnished free in eight of the small parks.

"Newspaper publicity naturally assists in popularizing parks and playgrounds."

Annual Rose Festival Important

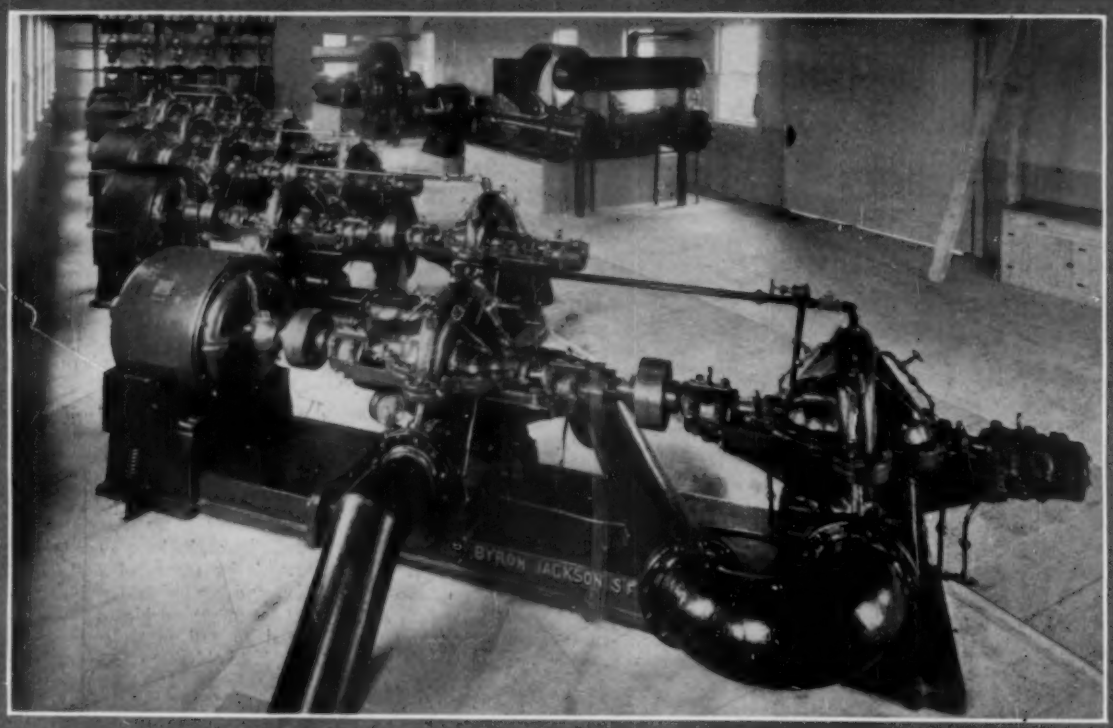
O. M. HADLEY, Chairman, Park and Tree Commission, Thomasville, Ga., reports:

"1. The parks have been made readily accessible by means of walks and bridle-paths, and provision has been made for the convenient parking of cars. Swings, secured to tall pines, numerous settees, and suitable shelters, have been provided for the use of picknickers and parties of various kinds. A bandstand, surrounded by an open-air roller skating-rink, is a unique attraction. The children's playground has been provided with suitable swings, slides, and other customary equipment, and adjoining it is one of the city's rose gardens.

"2. Prominent among the municipal celebrations with which are associated programs of more or less recreational nature, may be mentioned the annual Rose Festival, which attracts thousands of visitors from south Georgia and north Florida, and has won for Thomasville the enviable appellation "The City of Roses." In connection with this show, there are baseball games in the afternoon, and a Rose Festival dance at night. Other celebrations with either field events or ball games at the stadium are on Fourth of July, Labor Day, Armistice Day, Thanksgiving, and Christmas. At Christmas a large, brilliantly lighted Christmas tree is placed in the center of one of the principal streets, where it remains till after New Year's Day. For the special benefit of the children, opportunity is afforded for Easter egg hunts, and May Day pageants in the parks. Under private control, there are tennis courts and golf courses, both a standard eighteen-hole course and a minature course. Extensive polo grounds are now being developed on the boulevard which encircles the city.

"3. The city Park Commission does not sponsor any 'special day' celebrations, but endeavors to cooperate closely with all civic organizations and other activities that wish to do so."

Water Works Pumps



For many years Byron Jackson pumps have been standard equipment for medium and high pressure water works pumping. Byron Jackson Type "S" Pumps are supplied for conditions within range of single stage units. These pumps may be used in series, as shown here, when it is desired to obtain high efficiencies for certain operating conditions. Type "S" Pumps are built in a complete range of sizes and are the last word in mechanical reliability and hydraulic efficiency.

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CENTRIFUGAL PUMPS FOR EVERY SERVICE

METHODS and COSTS of REFUSE COLLECTION AND DISPOSAL

Refuse Collection Vehicles in England

IN some cities, especially in England, covered vehicles with low loading sides are being introduced for the collection of refuse. They have doors for loading which automatically open and shut as required, or they may be operated by hand or by pressure of the foot. These vehicles are quick in traffic and are easily and quickly dumped, as they can be dismounted from their running-gear by cranes and lifted to railway cars or boats or into incinerating plants. The tendency is to use very large collecting vehicles rather than small ones, a large one having a capacity of from 12 to 20 cubic yards, being more economical.

A collecting vehicle which Glasgow has adopted in connection with a fine new incinerating plant, is of much interest. It was adopted after considering the relative merits of twenty-one vehicles and making extensive practical tests of three of the most promising of them. The new Glasgow collector has a capacity of 14½ cubic yards. It is covered and has openings which permit the refuse to be emptied into it, after which it is entirely closed. The side over which the cans are dumped is 4 feet 6 inches from the ground, and of course some fewer inches from the sidewalk. The vehicle is driven by storage batteries, which are charged at the incinerating plant with the current which is produced there through the burning of the mixed refuse of the city. The vehicle has eight speeds forward and one in reverse. Notwithstanding its large size, it can turn in a circle of 48 feet. The distance traveled each day is about 20 miles for each vehicle. Collections of refuse are made at night in Glasgow, a fact which makes these large, noiseless collectors especially suitable.

—From the report of George A. Soper to the Committee of Twenty on Street and Outdoor Cleanliness, New York.

Comparison of Garbage Collection and Disposal Costs for Five Years

THE following table taken from the Report of the Department of Public Works, gives an interesting comparison of costs of collection and disposal of garbage in Oak Park, Ill., for the years 1925 to 1929, inclusive:

	1925	1926	1927	1928	1929
Tons collected and disposed of yearly..	16618.8	16335.3	17326.0	17476.0	16242.0
Tons collected and disposed of daily...	54.5	53.56	57.18	57.11	53.25
Number of men on trucks.....	3	6	8	9	9
Number of men on carts.....	11	8	7	7	7
Number of men in crematory.....	3	3	3	3	3
Number of two-horse carts.....	1				
Number of one-horse carts.....	8	8	7	7	7
Number of trucks.....	1	2	3	3	3
Pounds of coal burned per ton garbage.	113.02	108.1	105.02	94.4	102.2
Cost of coal per ton garbage burned...	25.6c	25.1c	27.2c	27.2c	29.5c
Cost of collection per ton.....	$1.625	$1.73	$1.79	$1.90	$2.003
Cost of disposal per ton.....	69c	74c	71c	68c	79.5c
Total cost of collection and disposal...	$38,438.94	$40,305.48	$43,262.74	$44,980.70	$47,568.48

Assistant Superintendent of Streets.
W. L. BERRY,

Akron's Garbage Fed to Hogs

AKRON, OHIO, which has a population of 256,398, collects approximately 19,000 tons of garbage per year from 245,000, the rest, in the Kenmore district, being service by private collection under city contract. The city-collected garbage is hauled about 9 miles to a hog farm, where about 85 tons of garbage is fed per day in summer and 50 tons in winter.

Garbage is separated from rubbish and other refuse and cans are placed in back yards for collection. A variety of equipment of various sizes is used in the collection system, including one 3½-ton, 4½-cubic-yard, two 2½-ton, 3½-cubic-yard, and two 1½-ton, 3-cubic-yard trucks; twenty-four 3-cubic-yard, seven 2-cubic-yard, two 3-cubic-yard, and five 4½-cubic-yard trailers; three 5-ton tractors and two 5-ton, 10-cubic-yard hopper trucks. Fifty-seven men are employed during the summer and 30 men during the winter, making weekly collections in the residence district in summer, and collections every ten days or two weeks in winter. Daily collections are made in the business section.

Collection and disposal costs are met by direct taxation. The collection payroll for 1928 was $69,874.60, with $12,755.40 for maintenance and operating costs, making a total of $82,630 for collection. For disposal, the total cost was $37,032.38, being $20,640 for payroll and $16,392.38 for maintenance, repairs and miscellaneous.

A. B. BACKHERMS,
Sewerage Engineer.

Private Collection with Municipal Disposal

PORTLAND, ORE., with a population of 300,000, has an area of 66 square miles, the whole of which is covered by a private garbage collection system. Garbage is mixed with other burnable refuse and collected in the residential districts from cans placed in the back yards. There are no alleys in Portland. Approximately 78,972 tons of garbage and rubbish was collected in 1929.

About 200 men are employed in collection during the summer and winter, using 136 1½- to 5-ton trucks of 5- to 10-yard capacities. Collections are made one to three times a week in the residential districts, and three to six times weekly in the business section. Garbage from hotels and restaurants is being collected and fed to hogs by licensed hog feeders, of whom there are eleven operating in the city.

The average length of haul to the incinerator is 1½ miles. During 1929, 29,118 tons of garbage and burnable rubbish were burned, at a cost of $24,102.46.

The average haul to the east-side fill is 3 miles. At this fill garbage, rubbish, and other materials are dumped and the fill is covered with earth by two Caterpillar tractors. At the west-side fill, to which the average haul is 1½ miles, building materials, automobile bodies, ashes and cans, brush and other bulky material are dumped. The cost of maintaining the east-side fill for 1929 was $22,596.75, and for the west-side fill, $6,016.56, making a total for all disposal, including incineration and fill, of $52,745.77. The disposal plant and fills are owned and operated by the city.

The incinerator, which cost $100,000 when constructed in 1910, was reconstructed in 1927 and Nye odorless furnaces installed at a cost of $97,000.

Householders and business houses pay the private collectors for collection service. The charges are not regulated by the city, but keen competition prevents overcharging. The cost of disposal is paid by tax levy.

WILLIAM G. HELBER,
Superintendent, Bureau of Garbage Disposal.

Garbage and Sewage Disposal Plants on Same Site

THE incinerator at Lancaster, N. Y., was built in 1927 on the same site as the sewage disposal plant. The plant handles approximately 12 tons of mixed garbage and refuse per day at a total disposal cost of about $2,000 per year.

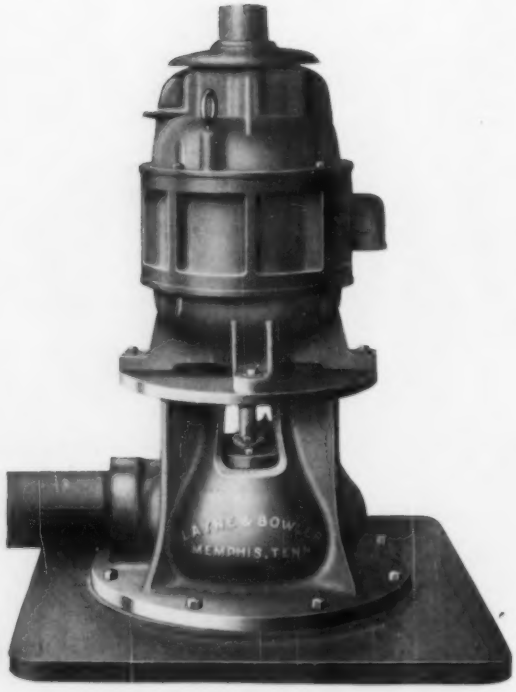
Lancaster has an area of 2.65 square miles and a population of 7,000. Three men are employed in the collection of garbage, which is mixed with combustible rubbish and small tin cans and bottles. One 2½-ton Pierce Arrow truck is used for daily collection, assisted by a 7½-ton truck of the same make on Mondays. Collections are made four days a week in the residence section and twice a week in the business district. Collection costs the city approximately $4,000 per year for payroll, $500 for maintenance and operating costs, and $130 for insurance, making a total of about $4,600 per year.

The trucks make an average of four trips to the incinerator each day, covering an average of 18 miles daily.

HAROLD J. HUBER,
Superintendent of Public Works.

And now— still better

LAYNE PUMPS



THE new Layne Deep Well Pumps have many improvements which give added long life, dependability, and which further reduce their already low cost of operation.

For two generations pump building and water development have been the life work of the Layne organization. We have, during this long period of time, tried and tested every conceivable type of pump — and by the process of elimination have evolved a pump that is the most dependable, efficient type possible to obtain.

Write for new bulletin

LAYNE & BOWLER, INC.

Memphis, Tennessee

New York	Chicago	Houston
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Columbus	Toronto	Lake Charles
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"Water or No Pay"

LAYNE PUMPS

"KEEP YOUR STREETS CLEAN"

ITEMS ON STREET CLEANING AND SNOW REMOVAL

Principles for Uniform Street Sanitation Records

THE Committee of the International Association of Street Sanitation Officials, appointed at the last convention to cooperate with the National Committee on Municipal Standards in preparing measurement standards for street sanitation, convened in Chicago on May 9.

The committee felt that extensive changes were necessary in the tentative drafts of units of measurement for street cleaning, refuse removal and disposal. To this end, it adopted the following principles upon which the final report will be based:

1. The purpose of standard units and methods of reporting is: (a) to provide the sanitation administrator with the proper information to plan, supervise and control the operation of his department; (b) to furnish him with a factual basis for preparing budget and appropriation estimates; (c) to supply him with a method of reporting his work to the public; and (d) to develop sufficient uniformity in reporting so that the administrator can compare quantities, costs and methods with those of other cities.

2. A separate treatment in the report shall be made for street cleaning, the removal of all municipal refuse and its disposal. So far as possible, the amount of work done and the cost for each of the three operations shall be shown separately for each method employed.

3. The following units for work were adopted as standards:

(a) Street cleaning—curb miles of streets cleaned
(b) Refuse removal—tons of refuse collected and hauled to a point of disposal
(c) Refuse disposal—tons of refuse disposed

4. Snow removal shall be treated separately, with the following standard units:

(a) Number of miles of sidewalk plowed
(b) Number of miles of street plowed
(c) Number of cubic yards of snow removed

5. Catch-basin cleaning shall be reported separately, with separate costs for hand and machine work, employing the following units:

(a) Number of tons or cubic yards removed
(b) Number of catch-basins cleaned

6. All computations of standard units in terms of unit cost shall include the following items of expense:

(a) Personal services (to include all direct labor costs)
(b) Supplies and materials
(c) Plant and equipment, including depreciation
(d) Overhead, to be restricted to direct supervision and not to include any expenses not directly assignable to the operating division

7. Classifications of the entries in the accounts from which the costs are computed shall correspond so far as possible to the general accounting classification of the city. The total amount of expenses used as a basis for unit costs should be checked periodically with the general city accounts.

It was decided that the final report of the committee shall include complete instructions with all necessary forms for computing quantities of work done and its cost, as well as the means by which these computations can be converted into daily, monthly and annual reports. In addition to the complete report on this subject, the committee plans to devise a guide for the preparation of annual street sanitation reports. This guide will indicate for street sanitation officials what information should be contained in the annual report, and the most appropriate way of presenting it.

The formal name, Committee on Uniform Street Sanitation Records, was adopted under which future reports and research will be conducted. J. J. Petranek, Director of Public Works of Cicero, Ill., is Chairman of the Committee. The staff and offices are located at 923 E. 60th St., Chicago.

Public Cooperation Essential to a Clean City

DURING my two years as an official directing a bureau of this nature in a city of 860,000 population, covering an area of 92 square miles, with 1,500 miles of highways and alleys and collecting 75,000 tons of garbage, 225,000 tons of ashes and 100,000 tons of rubbish yearly, I am convinced that the greatest problem confronting the officials in American cities is securing the cooperation of the public.

The utter disregard by the general public of the various ordinances provided to protect the health of the city and, at the same time, preserve its general appearance, is so conspicuous one can hardly believe that in a country as great as ours, where people have been thoroughly educated in law and order and taught all the rules of sanitation from childhood, they can wilfully disregard laws that are so essential to protect health.

However, it is done daily by thousands and yet they expect a force of possibly 500 to 600 men to meet an impossible situation. In order to give what the public demands of this department, without its cooperation, it would require a force at least ten times the number we have, and even this would not insure success.

We are not going to have that state of cleanliness in American cities until the general public realize the importance of civic pride and each citizen makes it his or her duty to comply with the laws and regulations. If, whenever a citizen finds one who fails to comply with the law, he makes it his duty to inform the proper authorities of the offender, and sees that the one committing the offence is prosecuted before the magistrate or whoever renders the decision as to the violation, I am sure a state of sanitation and cleanliness will develop so quickly the public will be amazed. This, with the full support of the police department, would effect a wonderful saving in the street-cleaning department and the health of the city would be greatly improved.

What the entire country needs is to educate its citizens in consistent good citizenship and civic pride. There is nothing to revolutionize in the department of street cleaning and after two years of observing the public's actions, I am confident the success of a clean city cannot be had without public cooperation.

COVINGTON K. ALLEN,
Engineer of Street Cleaning, Department of Public Works, Baltimore, Md.

Hollywood, Fla.

HOLLYWOOD, a city of Broward County, Fla., is on the east coast 18 miles above Miami. It has 8 miles of ocean beach, a deep-water harbor, several manufacturing industries and large hotels. The summer population is 2,500 and the winter population 25,000. Very little street cleaning is done here, a tractor with rotary broom being used on two blocks in the main part of town. Otherwise, only waste paper is picked up by the Garbage Department from cans.

C. W. TEN EICK,
City Engineer.

Berkeley, Calif.

THIS city of 81,000 population is situated on the east shore of San Francisco Bay in the northern part of Alameda County, directly opposite the Golden Gate and adjoining Oakland. It has an area of 8.6 square miles and is built on the Berkeley Hills, surrounding on three sides the 530-acre campus of the State University. About 190 miles of streets are cleaned for a 6-foot width on each side of the street, giving a total of 1,337,600 square yards. The equipment used by the 25 employees includes 3 trucks of 4 cubic yards capacity each, 12 hand carts used by white wings on the streets in the business districts, and hand brooms and other hand tools. For 1928, the appropriation was $44,300. This was increased to $46,000 for 1929 and to $47,000 for 1930.

C. H. THOMAS,
Assistant Superintendent of Streets.

THE DIAPHONE

A compressed air operated public alarm with a distinctive and penetrating tone.

When you have tried all other public alarm devices and find your need for a penetrating public alarm with a distinctive tone, unfilled, it is time that you installed a *Diaphone*.

The *Diaphone* is the old standby in public alarms. For years it has protected small municipalities throughout the country. It protected the U. S. Army Cantonments during the war and it can still be found protecting U. S. Government property. The *Diaphone* also has a fine service record in an entirely different field, one where the life and property hazard is equally as great as in the fire protection field—the lighthouse service. Along the coasts of this country, on the banks of the St. Lawrence River and on the shores of the Great Lakes, the *Diaphone* as a foghorn, has for years warned ships off the rocks. It was selected by two Governments for this important service because of its penetrating tone and reliability of operation.

The *Diaphone* has a tone that cries "Fire." It cannot be confused with whistles and other noises of the modern community. It is the only public alarm (other than a whistle) that will satisfactorily sound a code signal from a standard street fire alarm box. Furthermore, a storage reservoir with a capacity of 100 blasts is provided so that an alarm may be sounded on the *Diaphone* even though the electric current be shut off for a period of 24 hours.

Before you install a public alarm investigate the *Diaphone*.

Will operate from

Standard Street Fire Alarm Box

A Bulletin describing the Diaphone more completely will be sent upon request.

The Gamewell Company

Newton Upper Falls, Mass.

"A Box A Block"

Can be operated from

Peerless P. N. I. Transmitter located at fire station or phone exchange

TRAFFIC—FIRE—SAFETY ITEMS

Of Interest to DEPARTMENTS OF PUBLIC SAFETY

New York's Uncomparable—Not Incomparable—Crime Statistics

THE best reply to the sometime Commissioner Whalen's comparison crime statistics in New York with those of other cities is to point out that New York is one of the few important cities which have not joined the International Association of Police Chiefs in keeping uniform crime records. As long as any police official is free to keep his own records in his own way, comparison is impossible or ridiculous. We might point out that in Mr. Whalen's own report the figure for crimes of violence, on page 14, is 7,009, but on page 16 it becomes 4,519. The Committee on Uniform Crime Records (Bruce Smith, Director, 261 Broadway, New York) is making great progress with its work. Over 600 cities in 44 states, are now filing returns with it. Next spring we shall have, for the first time, comparable records for a full year of police activity for these cities. New York and other laggards ought to join this procession of progress.

Red Cross Emergency Aid for Highway Accidents

AN experimental system of emergency first aid stations on public highways is being organized by the American Red Cross through its Chapters in an effort to save the lives of some of the hundreds of thousands of persons who are injured in motor-vehicle accidents every year. The procedures for this service have just been approved and will shortly be furnished to all Chapters. They are described in some detail in *The Red Cross Courier* for June 16.

The first aid stations are to be located near important crossroads and other dangerous point on highways where medical assistance is not readily available. Wayside stores, community centers, suburban stations of state police, etc., are suggested as locations where continuous and permanent service can be carried on. The service is not intended to take the place of medical aid given by physicians and hospitals, but covers only the necessary emergency care to the injured before the services of a physician can be secured. Part of the equipment of a station will be an up-to-date list of names of physicians, hospitals and ambulance services in the immediate vicinity, approved by the local medical society, together with addresses and telephone numbers.

The types of first aid supplies that are recommended are described in *The Courier* and may be obtained by the local Red Cross Chapters from the National Headquarters or from branch offices. At least one person familiar with the supplies and trained in administering first aid should be available at each station at all hours. No charge will be made for the emergency first aid rendered or for the supplies. The service is to be financed from the proceeds of the annual Roll Call of the Red Cross.

Another feature of the service is volunteer automobile transportation to a physician or hospital when necessary. A list of persons who are willing to allow the use of their cars in emergency will be kept on hand and arrangements made that at least one car is available at any given time of day.

Special signs to indicate the location of emergency first aid stations have been made and are to be placed on the highways near the stations after permission to erect them has been obtained from the appropriate highway department.

The German, French and Belgian Red Cross Societies are now sponsoring a similar first aid service on their highways, and the reports indicate that the projects have been successfully launched and meet with public approval.

A. A. A. to Expand Schoolboy Patrol System

THREE hundred and fifty thousand schoolboy patrol units within the next two years, is the objective of a large expansion program which is being inaugurated by the American Automobile Association. There are now 175,000 boys organized in this safety brigade, and it is felt that their efforts to safeguard children on their way to and from school have had a large share in the reduction of traffic fatalities among children in the past few years.

The A.A.A. program also calls for a national campaign to make safety education in the schoolroom universal. Working in cooperation with the school authorities, the clubs have already succeeded in securing the admission of safety posters and safety lessons into the schools of 26 states, where they are reaching 3,500,000 children. This safety material is supplied free of charge by the Association and its member clubs.

Fire Salvage to Be Taught by "Talkies"

THE International Association of Fire Chiefs is responsible for a pioneer enterprise now under way in Hollywood which will result shortly in a two-reel all-talking picture designed to instruct fire department employees and others in the modern methods of salvage. As has long been recognized, a substantial percentage of the nation's fire losses is represented in preventable damages to property and goods by water, weather, and other elements during and after fires.

The production is sponsored by the National Board of Fire Underwriters and is being supervised by Chief Ralph J. Scott, of the Los Angeles Fire Department, President of the International Association, in the Metropolitan Sound Studios. According to present plans, the picture will be the first of a series to demonstrate different branches of fire department and safety methods. Various organizations interested in fire prevention, safety equipment, etc., are financing the production.

Different types of residences, warehouses, and factories figure in the first picture, being used to illustrate the cooperation between fire-fighters and the salvage corps in various situations, during a fire. The close cooperation between fire inspectors and the local salvage organization is also a feature.

A Fire-Alarm in Every Room

A NEW automatic fire-alarm system, which records directly to a central station the exact location of any fire that breaks out in buildings in which the system has been installed, has been put into operation in Lawrence, Kans. The thermostats that record the danger are installed in rooms, closets, garages and other places where there is a possibility of fire.

John G. Stutz, Executive Secretary of the League of Kansas Municipalities, writing in an illustrated article of the June issue of *Kansas Municipalities*, describes the service in some detail. Under "Briefly How It Works," Mr. Stutz says:

"The automatic fire-alarm system transmits distinct signals to the central station in case of fire or line troubles, making it possible for every fire to give its own alarm.

"The alarm originates when the individual thermostats installed on the ceilings of the buildings so protected are released by heat, melting the fusible contacts. The action of the thermostat in turn releases the transmitter, which signals a particular code number, giving the street address and floor location of the fire to the central station, where it is recorded before being transmitted to the fire department headquarters.

"The system provides for all emergency repairs, continuous maintenance, and station attendance, and has a normally closed electrically supervised circuit protecting the main transmission lines and thermostat circuits, and is under constant tests by indicating instruments."

Lawrence is the first city to give a franchise for this service. Mr. Stutz writes that a saving of more than 25 per cent in fire insurance premiums on property protected by the system is anticipated, and that fire losses are expected to be cut in half.

BUY A BUSINESS, SEE Classification 45
Seattle Post Intelligencer
THE POST-INTELLIGENCER
SEATTLE, APRIL 7, 1930.
PART TWO
MONDAY
HEALTH CHIEF'S REPORT ATTESTS WATER SUPPLY PURITY
CHLORINATION TREATMENT IS IMPROVED ON
The high standard of Seattle's water from the standpoint of the public health has been maintained through chlorination, it is declared in the annual report of Dr. E. T. Hanley, city health commissioner.
"The water department recently installed measuring devices which automatically record and regulate the flow of water and the amount of chlorine added.
"This apparatus was in operation during the whole of 1929 and we are convinced that its installation was a definitely progressive step and that we are now fully justified in regarding Seattle's water as being safe.

Automatic Chlorination — Solves Seattle's Problem

"The Only Safe Water is a Sterilized Water"

ACCURATE proportioning of chlorine dosage to a widely varying flow was Seattle's problem. Dependable automatic control apparatus a necessity. « « That the six W & T Automatic Vacuum Chlorinators installed on Young's Lake Supply adequately fill this need is evidenced by Dr. Hanley's report. « « Technical publication 106 (yours for the asking) describes this apparatus in detail.

WALLACE & TIERNAN

COMPANY, INCORPORATED

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NEWARK • NEW JERSEY

Baltimore, Boston, Buffalo, Charleston, Charlotte, Chattanooga, Chicago, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Knoxville, Lexington, Lincoln, Los Angeles, Minneapolis, New York, Ogden, Oklahoma City, Philadelphia, Pittsburgh, Roanoke, San Francisco, Seattle, Spokane, St. Louis, Syracuse. Wallace & Tiernan, Ltd., Toronto, Winnipeg, Canada. Wallace & Tiernan, Ltd., London, England

SA-27

H. W. BEUSSE
Police Chief, Athens, Ga.
(Appointed 1916)

TOM C. WARRICK
Fire Chief, Kingsport, Tenn.
(Appointed 1917)

JOHN ELLISON FOY
Commissioner of Police,
Savannah, Ga.
(Appointed 1925)

G. E. RENKEN
Fire Chief, Laredo, Texas
(Appointed 1928)

FRANK J. RAMSEY
Police Chief, Elgin, Ill.
(Appointed 1925)

WHO'S WHO IN PUBLIC SAFETY

The 31st of a Series of Portraits of Fire and Police Chiefs Which Has Appeared Monthly Since January, 1928

WILL S. KNIGHT
Police Chief, Corsicana, Texas
(Appointed 1906)

GEORGE C. NEWTON
Police Chief, Newport, Vt.
(Appointed 1928)

GUY C. REEVE
Police Chief Miami, Fla.
(Appointed 1928)

M. T. DANIEL
Fire Chief, Abilene, Texas
(Appointed 1928)

B. B. QUALLS
Fire Chief, Murfreesboro, Tenn.
(Appointed 1924)

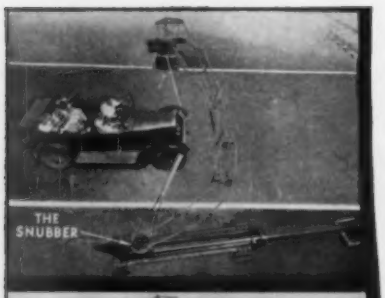
ALLEN JUDSON
Fire Chief, Stratford, Conn.
(Appointed 1910)

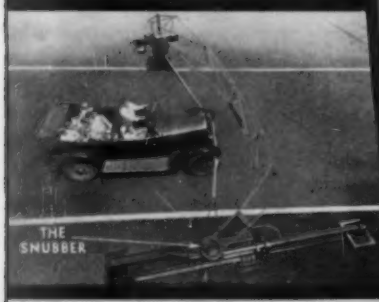
PATRICK J. BRAZELL
Police Chief, Bennington, Vt.
(Appointed 1896)

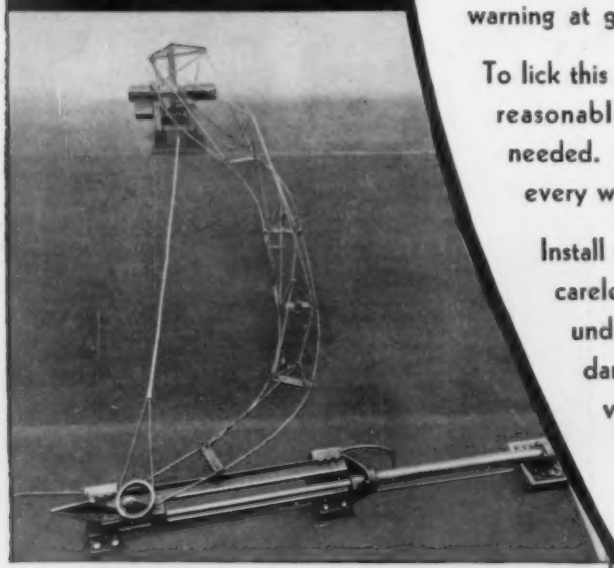
R. J. TOMLINSON
Fire Chief, Thomasville, N. C.
(Appointed 1923)

V. P. ADAIR
Fire Chief, Clinton, S. C.
.. (Appointed 1921)

PRACTICAL CROSSING PROTECTION







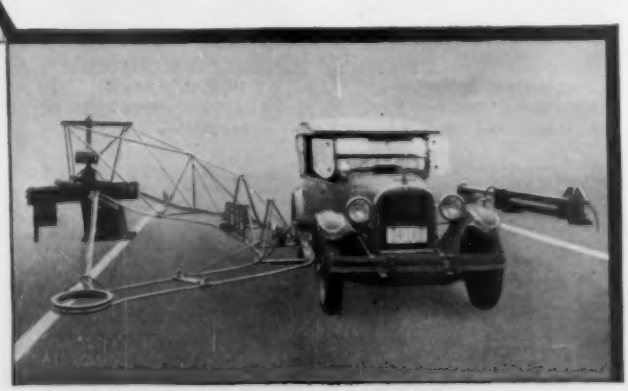
for the motorist and the railroad too!

FOR years, towns, cities, states, the public and the railroads have all looked upon grade separation as the only sure solution to the crossing problem. High cost, however, has defeated the effectiveness of this means to safety.

Except in the largest centers of population grade separation is fighting a losing battle. For every separation constructed three new crossings are opened. The need for protection becomes more urgent every day. Yearly statistics prove that more than a warning at grade crossings is a vital necessity.

To lick this problem---to get the upper hand without delay---a reasonably priced, quickly installed, thorough protector is needed. The Highway Guardian fills these requirements in every way.

Install this automatically operated barrier and immediately careless, irresponsible and "rattled" drivers are brought under control. By force all traffic is stopped when dangerous to pass. Lives are saved, car wrecks prevented, train delays eliminated. The Highway Guardian is truly a practical method of securing real crossing protection.



FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO
ST. LOUIS MONTREAL

THE HIGHWAY GUARDIAN

THE CROSSING GATE THE MOTORIST CANNOT CRASH

When you write for that catalog, kindly mention THE AMERICAN CITY.

JULY, 1930

Vol. XLIII, No. 1

The American City

443 Fourth Avenue
New York

50 Cents, $4 a Year

New Standard Speed Law Proposed

"Basic Rule" and "Indicated Speeds" Approved for Incorporation in "Uniform Act Regulating Traffic on the Highways"

ANY state which enacts into law the new recommendations of the National Conference on Street and Highway Safety will virtually say to the motorists on its streets and highways:

"You are subject to punishment for misdemeanor if you drive a vehicle at a speed greater than is reasonable and prudent, having due regard to the traffic, surface and width of the highway, and the hazard at intersections and any other conditions then existing. This means that you must not drive at a speed too great to permit you to exercise proper control of your vehicle, and to avoid colliding with any other vehicle or person using the highway in a legal manner.

"The foregoing is the 'basic rule' of driving. If you obey it, the law does not set any arbitrary limits as to your speed. The law sets forth, however, certain 'indicated speeds' for specified conditions or locations. They are to be used as the basis for the assessment of special penalties. If you exceed one of these indicated speeds, and at the same time drive in violation of the 'basic rule', or in violation of any rule of the road or traffic regulation, you will be subject, upon conviction, to a penalty for reckless driving, which is much more severe than that for a misdemeanor. The indicated speeds follow:

"1. *Fifteen miles per hour:*
- a. When passing a school building or the grounds thereof during school recess or while children are going to or leaving school during opening or closing hours; or
- b. When approaching within 100 feet of a grade crossing of a steam, electric or street railway where the driver's view of such crossing or of any traffic on such railway for a distance of 400 feet in either direction is obstructed.

"2. *Twenty miles per hour:*
- a. In any business district as defined herein; or
- b. Upon approaching within 50 feet and in traversing an intersection of highways where the driver's view in either direction along any intersecting highway for a distance of 200 feet is obstructed, except that when traveling upon a through street or at traffic-controlled intersections the district speed shall apply.

"3. *Twenty-five miles per hour:*
- a. In any residence district as defined herein; or
- b. At any railway grade crossing where the view is not obstructed; or
- c. In public parks within cities, unless a different speed is indicated by local authorities and duly posted.

"4. *Forty-five miles per hour:*
Outside of business or residence districts, except as otherwise limited by this Act.

Committee to Report on Exact Language of the Act

At the three-day session of the National Conference on Street and Highway Safety in Washington the last week in May, numerous committee meetings and lively discussion at the general sessions resulted in the adoption of the proposed standard for regulating automobile speeds outlined above. This agreement was reached so late in the deliberations of the Conference that the precise phraseology of the section on Restrictions as to Speed for incorporation in the revised Uniform Vehicle Code was referred back to the Committee on Uniform Traffic Regulations. Up to the time of sending to press the present issue of THE AMERICAN CITY (June 25), the Committee has not taken final action in this matter. It is believed, however, that, stripped of some of its legal phraseology and details as to penalties, the intent of the proposed restrictions is accurately given.*

Powers of Local Authorities Limited

Provisions in the new Uniform Vehicle Code of special importance to municipalities and other local authorities in states which may adopt the Code, are Section 6 of Article II, which stipulates that:

"The provisions of this act shall be applicable and uniform throughout this state and in all political subdivisions and municipalities therein, and no local authority shall enact or enforce any rule or regulation in conflict with the provisions of this act unless expressly authorized herein"; and Section 21 of Article VI, which stipulates the conditions under which local authorities may permit higher speeds than those stipulated in the "indicated speeds" already quoted. This section reads as follows:

"Local authorities in their respective jurisdictions are hereby authorized in their discretion to permit by ordinance higher speeds than those indicated in subdivision (b) of Section 20 upon through highways or upon highways or portions thereof where there are no intersections, or between widely spaced intersections, provided signs are erected giving notice of the lawful speed, but local authorities shall not have authority to modify or alter the 'basic rule' set forth in subdivision (a) of Section 20, or in any event to permit by ordinance a speed in excess of 45 miles per hour."

* The revised Uniform Vehicle Code, embodying these and any other new provisions adopted at the recent Washington meeting, will soon be obtainable from the headquarters of the National Conference on Street and Highway Safety, 1615 H Street, N. W., Washington, D. C.

A TYPICAL APPARATUS-EQUIPPED CORNER ON ONE OF THE 39 CITY-OPERATED PLAYGROUNDS OF LOS ANGELES

Playground Safety Practice

By JOHN C. HENDERSON
SUPERVISOR OF PLAYGROUND AND COMMUNITY CENTER ACTIVITIES,
LOS ANGELES, CALIF.

WHILE it has long been conceded that playgrounds are far safer play areas for children than streets or vacant lots, accurate information as to the frequency of serious accidents on playgrounds, and analysis of the causes of these accidents, have been lacking. For the past four years the Los Angeles Department of Playground and Recreation has made a careful study of accidents with a view to determining just how safe a playground can be. During this period the 39 playgrounds operated by the Department have had a total attendance of more than 15,000,000 visitors.

When it was determined to undertake such a study, all accident reports for the preceding two years were carefully analyzed. A serious accident was arbitrarily defined as one requiring medical attention. For example: a cut requiring stitches was considered a reportable accident, and a minor cut receiving only first aid on the ground was not so considered. Directors were requested, however, to report all accidents that might result seriously, particularly head injuries, leaving it to the Department to disregard any reports that were not pertinent.

The analysis of these reports indicated that the Department had in most instances provided all necessary mechanical safeguards. It was realized, however, that the installation of such safeguards can play but a relatively small part in any accident-prevention program, as safety engineers are agreed that three-fourths of all accidents can be avoided only by influencing people to think safely and act safely.

The establishment of junior safety patrols seemed to be the best method of attacking the problem. At each playground a patrol of from four to twelve boys and girls over twelve years of age were carefully selected by the Playground Director and provided with a distinctive arm band furnished by the Public Safety Department of the Automobile Club of Southern California. These junior safety workers had no jurisdiction with regard to traffic, but were used to instruct patrons in the use of apparatus, to caution those who offended against safety practice, and to assist in apparatus inspection. In addition to these duties, they proved to be very helpful in caring for play supplies and even in leading activities of younger children. At the same time a series of safety posters was inaugurated for general distribution to all grounds.

It was soon found that certain activities were contributing a disproportionate percentage of accidents. For example, it was found that baseball players had a tendency to throw the bat wildly after making a hit, and that frequently the next batsman up stood too close to the batter. When it became apparent that these practices were causing accidents, Directors were asked to instruct patrons on getting rid of the bat, and a rule was put into effect requiring all batsmen to keep their places on the bench until their turn came. This resulted in almost eliminating baseball accidents.

The following tables will summarize the analysis of accident reports:

TABLE I

Type of Plays	*Per Cent of Total Accidents*
Apparatus play	63.5
Athletics	23.6
Free play	12.9

TABLE II

Age Range of Patrons	*Per Cent of Total Accidents*
Under 6 years	17.2
Six to 15 years, inclusive	58.6
Sixteen to 44, inclusive	13.6
Over 45	.6 of 1%

TABLE III

Cause of Accident	*Per Cent of Total Accidents*
Lost grip	23.9
Playing in restricted areas	12.7
Tripping or falling	9.8
Collision	9.3
Pushing or crowding	8.7
Struck by bat, stick, mallet, etc.	6.4
Climbing, unauthorized	4.6

Standing instead of sitting	4
Animal bites, scratches, etc.	2.3
Overloading	1.7
Struck by missile	1.7
Too young	1.7
Clothing caught	.6
Part of body caught	.6
Unclassified	1.2

Eighty-four per cent of all accidents occurred to participants in a specified activity; that is, were caused directly by the activity taken part in. Six per cent affected spectators, while 15.4 per cent affected "others." "Others" were defined as persons engaged in playing, either free or organized, who intruded on the space for the activity of another group and were injured thereby. For example, a child playing tag in the swing area and receiving an injury from a swing would be listed under this heading.

The common pieces of apparatus listed in order of their danger are as follows:

Sliding poles
Flying rings
High slide
Traveling rings
Combination frames
Horizontal bars
Low slides
Teeters

The sliding poles proved so dangerous that they were eliminated from the Los Angeles playgrounds.

In the athletic activities," hard" baseball led the list, followed in turn by playground ball, American football, volley-ball and horseshoes. The accident rate from other athletic activities was very low.

Some of the ways in which accidents were reduced will prove interesting. It was found that practically all ring and bar accidents were due to lost grip. By encouraging performers to chalk or dust their hands frequently when using this apparatus, slipping due to sweaty hands was largely overcome, with a marked reduction in accidents. It was also noticed that free play was a frequent cause of accidents.

WHO GETS HURT—AND HOW?

One of a series of charts by which the author visualizes accident reports and safety program results

A small group of youngsters playing tag and dashing about the playground and through restricted areas not only disorganized other activities but proved a fruitful source of accidents. Safety patrols were instructed to stop this type of play, with the result that the number of accidents that were caused by tripping, falling and collision was greatly reduced.

The following table tells the story of accident reduction during the four-year period:

Fiscal Year	*Number of Accidents per 100,000 Attendance*
1925-26	2.54
1926-27	2.21
1927-28	1.36
1928-29	1.30

Another interesting proof of the value of the safety program is the fact that during the summer of 1929 a Certificate of Honor was promised to the playground which made the best record in accident prevention during the summer playground season. To the surprise and delight of the Department, all but five playgrounds completed the summer season without a single serious accident, making it necessary to award a certificate to each one of the thirty-four that had achieved perfect records.

The studies made have therefore not only brought about a marked reduction in accident rate, but have given a concrete measure of playground safety, which has been of great value in publicity work. The analysis is now kept on a perpetual inventory, and any apparent trends toward unsafe practice are corrected immediately after being discovered.

AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA
SAFETY IS SANITY IN ACTION
SAFETYGRAM
SAFETY IN PLAY DRIVES ACCIDENTS AWAY
AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA
SAFETY IS SANITY IN ACTION
SAFETYGRAM
SAFETY IN PLAY DRIVES ACCIDENTS AWAY
Number 1
July 8 to July 13, 1929
HELPING OTHERS TO REACH THE PLAYGROUND SAFELY
—PLAYGROUND SAFETY PATROL MEMBERS—
Number 2
July 15 to July 20, 1929
TEACH NEW ARRIVALS YOUR SAFETY RULES
—PLAYGROUND SAFETY PATROL MEMBERS—

WEEKLY "SAFETYGRAMS" PLAYED A LARGE PART IN THE CAMPAIGN

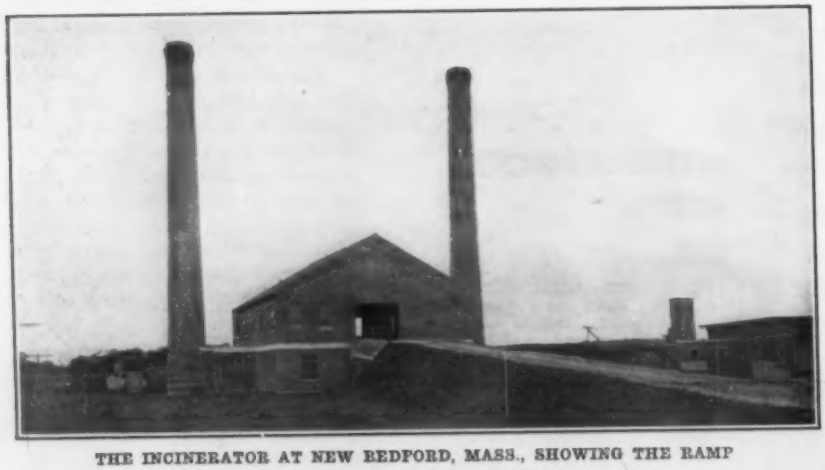
The lower half of this one told patrol members how to encourage all boys and girls to come to the playgrounds—"the safest play places;" and how to teach them safety on the streets.

And the lower half of this one contained six "reminders" about welcoming strange boys and girls to the playground and teaching them the safety rules; and about safety swinging.

Combined Collection and Incineration Dispose of New Bedford Refuse

By A. M. THRESHER
SUPERINTENDENT
OF GARBAGE DISPOSAL,
NEW BEDFORD, MASS.

NEW BEDFORD has an estimated population of 120,000 within an area of 19.4 square miles. In 1921 the city acquired the Cobwell reduction plant from the New Bedford Extractor Co. This was operated until 1923, when it was destroyed by fire. From 1923 to 1927 the garbage was run through a direct heat dryer to reduce the moisture, the dried residue being hauled away by local farmers. This worked well as a temporary method. During this time the city was making a study of disposal as used in other cities, with the idea of securing a system that would give them an efficient and sanitary disposal. The services of Samuel A. Greeley, of Pearse, Greeley and Hansen, Chicago, were secured to make a survey of the city as to conditions and methods. His final report favored incineration as the method best suited for New Bedford. Specifications were drawn and invitations for bids for a 100-ton plant were asked. Eight bids were received, with a considerable variation in prices. The Superior Incinerator Co., of Dallas, Texas, was awarded the contract for $99,500. The plant was completed and accepted in December, 1926.



THE INCINERATOR AT NEW BEDFORD, MASS., SHOWING THE RAMP

Collection

The method of collection prior to the completion of the incinerator included ashes and rubbish by the Street Department and garbage by contract. Ashes and rubbish were collected once a week, garbage six times a week from hotels, restaurants and wholesale houses, and twice a week from the residential districts throughout the year.

Before the incinerator was put into operation, the public was notified through the press and by printed rules given to each householder that all combustible material formerly placed with the ashes must be kept in a separate container. This was collected once a week in trucks having a capacity of 10 cubic yards. The fact that the garbage contract had another year to run caused us to operate the plant under a separate collection, which was not an economical method for incineration, the amount of auxiliary fuel being excessive under this arrangement.

In June, 1929, a contract was awarded for a mixed collection which went into effect July 1, 1929. Since this system was put in operation, there has been a decided saving in both collection and plant operating costs. During ten months of 1927, under separate collection, 14,759 tons of garbage and rubbish was incinerated, averaging 58 tons daily and 964 tons of coal was used. For the year 1928, with separate collection, 16,204 tons was incinerated, averaging 53 tons daily, and 739 tons of coal was used. For the first seven months of 1929 with separate collection, 9,369 tons was incinerated, averaging 52 tons daily, 478 tons of coal being used. For the last five months of 1929, with mixed collection, 9,250 tons was incinerated, averaging 71 tons daily, and 155 tons of coal was used.

The cost per ton for collection and incineration for 1927 was $8.37; for 1928, $8.96; the first seven months of 1929, $8.83; and the last five months of 1929, $5.62.

The mixed material is collected from approximately 10 square miles of the city's area, this covering the built-up sections.

Equipment

Under the separate collection system, for rubbish, 5 10-yard trucks and 20 men were employed, 14 3-yard horse-drawn wagons and 29 men for garbage. Under the mixed collection by contract, 16 trucks with 3-yard bodies, one 8-yard body and 45 men are employed. The 8-yard truck is used for collecting bulky material from the large department stores. Twelve 3-yard trucks collect from the residential districts, and one 3-yard truck from hotels, restaurants and wholesale houses.

The householders are required to wrap all garbage in paper, placing it with the combustible material or in a separate container, as they may choose, but it must be kept in covered receptacles and in a convenient place at the rear of dwellings, readily accessible for the collector.

There is no question but that mixed collection is the ideal method for incineration, from the point of economy and sanitation.

Bronze Plates Show Location of Valves

IN Ottawa, Ont., during the winter, it is not uncommon for valves to be covered with more than 24 inches of ice, making it necessary for some means to be provided to find them easily.

The scheme was devised—and has worked admirably — of placing 6-inch bronze plates on intersection buildings or telegraph poles and street or railroad poles at standard height of 7 feet above the elevation of the curb. Stamped on these plates is information regarding the size of the valve, together with the distance in feet and inches from the base of the pole to the valve. All trucks sent for emergency work carry tapes and other instruments making it easy to locate buried valves. Floodlights and flashlights are also carried so that it is easy to read the plates at night.

W. E. McDONALD,
Engineer, Water-Works Department, Ottawa.

The 1929 Municipal Index contains the most complete and up-to-date statistics on water-works ever published in the United States. The collection and purification of the domestic and industrial supplies of 4,300 cities are reported.

Sludge for Sale at Rochester, N. Y. —and They Sell It, Too

By WILLIAM A. RYAN
CHEMIST-IN-CHARGE,
IRONDEQUOIT SEWAGE TREATMENT PLANT,
ROCHESTER, N. Y.

AT the Irondequoit sewage treatment plant there are 40 sludge drying beds, each 44 feet square. These beds consist of 6 inches of broken stone, 8 inches of gravel, 3 inches of coarse sand, and 3 inches of fine sand. The underdrains are composed of 3-inch farm tile, which is laid with open joints on 8-foot centers. Concrete partition walls separate the individual beds, the total number being divided into four rows of ten units each. Between the first and second and the third and fourth rows, a wide depressed concrete channel is constructed. A narrow-gage track is laid on the floor of the channels, and the tops of the heavy masonry side walls provide support for standard-gage tracks upon which moves a gantry type crane.

Removing the Sludge

When sludge is being removed, a train of four side-dump cars and an electric battery locomotive is run into either of the two channels between the drying beds. The empty car bodies are hoisted and placed on the beds by the gantry crane. When filled, the bodies are again transported to the train by the crane, and the locomotive hauls the loaded cars to the sludge dump. Two locomotives are generally used, one for each four-hour shift, in order to relieve the heavy drain on the batteries. Each car has a normal capacity of 40 cubic feet. However, it is the usual practice to load a car with 2 cubic yards of sludge and to provide extra bodies in the various beds where sludge removal is under way, in order that the number of trips to the dump may be kept down to a minimum and that there may be no delay in loading trains. This procedure allows the removal of approximately 160 cubic yards of sludge per eight-hour day.

THE GANTRY CRANE FOR REMOVING DRIED SLUDGE FROM THE BEDS AT EITHER SIDE OF THE CENTER WALL

The loading of the dried sludge is carried out by seven laborers and a crane operator. A train crew consists of two men, one to operate the locomotive and the other to brake the train and tipple the car bodies from the dump trestle. All operations are performed under the direction of a competent foreman. Except for the latter, all labor is paid 60 cents per hour, and power for recharging the batteries is furnished from a hydro-electric power station which is a part of the sewage-treatment plant.

The drying season usually extends from April 15 to November 15, the best drying weather occurring during the months of June, July and August. The number of removals possible varies from six to ten per season, depending on the precipitation. Also, the depth of wet sludge drawn to the beds is varied during the year. Eight inches appears to be the best depth from April to June, and September to November. During the midsummer months, the depth is increased to 10 inches and the last drawing of the year is made about 20 inches, inasmuch as the sludge remains on the beds during the winter.

With the adverse drying conditions, it is necessary to lagoon a portion of the sludge produced. With the present load on the treatment plant, of more than 50,000,000 gallons per day, the sludge-bed area has been reduced to less than ¼-square foot per capita, or about 8 per cent less than the area upon which the original design was based. It is realized today, however, that one square foot per capita is necessary with climatic conditions as they exist in the northeastern part of the United States. At Rochester, the drying time is about twelve days in Summer and twenty to thirty days during the spring and fall months.

The following tables furnish a summary of wet and dry sludge removal and disposal for the last six years of operation:

SLUDGE DISPOSAL DUMP AT THE MAIN SEWAGE TREATMENT PLANT AT ROCHESTER

TABLE 1

Years	Wet Sludge Drawn Cubic Yards	Drawn on Drying Beds	Lagooned	Moisture %
1924	26,696	24,174	2,522	90.0
1925	25,056	22,230	2,826	90.9
1926	21,710	14,400	7,310	90.8
1927	22,935	19,584	3,351	91.9
1928	28,932	18,294	10,638	93.5
1929	26,436	24,096	2,340	92.7

TABLE 2

SLUDGE ANALYSIS—DRY BASIS

Year	Nitrogen %	Volatile %	Fixed %	Ether Soluble Matter—%
1924	1.99	44.2	55.8	9.7
1925	2.05	44.7	55.3	12.7
1926	1.99	47.2	52.8	11.4
1927	2.05	43.1	56.9	13.4
1928	2.21	48.2	51.8	12.8
1929	2.33	47.9	52.1	12.5

TABLE 3

DRY SLUDGE REMOVED FROM BEDS

Year	Cubic Yards	Moisture—%	Number of Removals
1924	8,294	57.0	11
1925	6,923	57.2	8.5
1926	5,831	56.0	6
1927	7,648	55.7	10
1928	5,612	56.5	8
1929	6,904	57.4	10

TABLE 4

REVENUE FROM THE SALE OF SLUDGE

Year	Loads Sold	Revenue
1924	1,613	$961.00
1925	726	391.50
1926	640	337.40
1927	506	253.00
1928	847	423.50
1929	1,281	640.50

Sludge Sold for Fertilizer

The cost of sludge removal at the Irondequoit plant under present conditions of operation averages 35 cents per cubic yard. The dried sludge has a ready sale, particularly during the fall and winter months. It is hauled for distances of fifteen miles, whereas ten years ago the maximum haul was not more than five miles. The sludge is applied to the greens and fairways of local golf courses and as a top dressing for lawns. Nearby fruit growers purchase a large quantity each season and state that its use increases the yield of fruit, the sludge being spread only around the trees. During the winter months, truck gardeners haul the sludge and spread it on their fields. In the spring, it is plowed under the surface. The gardeners claim that the sludge is an excellent fertilizer for corn, celery, cabbage and bean crops; in fact, for any vegetable which grows above ground.

With the aid of the wet sludge lagoon and the sale of the greater portion of the air-dried sludge, the sludge-disposal problem has not become serious as yet at the Irondequoit plant. However, effort is exerted at all times to maintain and develop the interest of the fruit growers and truck gardeners in the use of the material and to improve loading facilities at the sludge dump. It has been observed that when conditions there are such as to allow quick and easy loading, there is no difficulty in disposing of the seasonal accumulation.

National Foundation Proposed for Traffic Research

AT the closing session of the Third National Conference on Street and Highway Safety, in Washington on May 29, the following resolution was unanimously adopted:

Whereas, the various committees of this Conference, in their efforts to base their reports not on opinions but on facts, have been seriously handicapped by the lack of authoritative and comprehensive data on many vital phases of the traffic, transportation and safety problems; and congestion in urban communities is of growing importance and complexity, with resultant economic loss conservatively estimated at two billions of dollars annually and an appalling annual toll in human lives and suffering; and

Whereas, there is a close relationship between congestion of vehicles on the city streets and city planning, highway design, land utilization, and the public transit facilities of the community; and

Whereas, public authorities, civic organizations, property owners, business, financial and insurance interests, transportation agencies, automobile manufacturers and owners of automobiles are interested in the development of measures, both corrective and preventive, for the relief of congestion which shall bring about the greatest possible improvement at minimum costs, equitably distributed;

Now, therefore, be it resolved, (1) That the Third National Conference on Street and Highway Safety urgently requests the cooperation of the Federal Government, through such technical research and fact-finding experimentation as could properly be conducted by the Bureau of Public Roads of the Department of Agriculture, the Department of Commerce, and other governmental offices; and to this end, the Conference earnestly recommends to the Congress of the United States that necessary legislation be provided to permit the proper governmental agencies to conduct such research and experimentation upon important phases of the traffic and congestion problem, and to cooperate in these matters with municipal and other local authorities.

And (2) that the Conference further requests that the Honorable Robert P. Lamont, as its Chairman, appoint a committee to consider ways and means of establishing a national foundation, non-governmental in character, equipped with the funds and man-power adequate to conduct comprehensive studies of such problems of congestion affecting public safety, the stability of property values and the orderly development of urban communities, as are indicated on the list appended hereto. It is suggested that, in its research on these and similar problems, the proposed foundation use as fully as practicable the cooperation of existing organizations, and educational and research institutions in their respective fields.

REQUIRING RESEARCH AND EXPERIMENTATION

1. The relation between traffic and transit conditions and facilities, and the trends in centralization or decentralization of cities with particular attention to the effects of these trends upon the stability of property values and upon the efficient conduct of business, upon living conditions and upon the public welfare generally.
2. Factors to be considered in determining the relative advantages and cost of several possible programs of increasing street capacity; i. e., widening of existing main traffic streets, development of new thoroughfares, double deck highways, arcaded or elevated sidewalks and the construction of off-street transit facilities.
3. Comparative advantages and cost of the widening of radial traffic arteries from a central business area, and the construction of by-pass routes to relieve that area of traffic not destined thereto.
4. The relationship of building bulks and intensity and character of lot occupancy, to traffic density and transportation requirements.
5. Comparison of various street intersection designs existing or proposed, with respect to traffic facilitation, safety and cost.
6. The relation between automobile speeds, street capacity and accidents.
7. Effective traffic capacity per lane, of highways of various widths and characteristics.
8. The effect of standardization of traffic regulations upon accidents, speed and street capacity.
9. Factors which should determine public policy with respect to railroad or highway grade separation.
10. Principles which should guide in planning public transportation facilities as part of a city plan.
11. Effect of various types of traffic control, and particularly signals, upon the capacity of streets, the movement of traffic and public safety.
12. Factors to be considered in the planning of express parkways, main traffic highways or superhighways in the residential environs of metropolitan areas.
13. The economic relationship of street and highway lighting to traffic facilitation and safety.
14. Characteristics of various types of pavements, and effects of defective pavements, in relation to traffic capacity, speed and accidents.

New National Hydraulic Laboratory Will Aid Cities and States

ANY city or state which has a hydraulic research problem may secure help from the new National Hydraulic Laboratory, to be established at the Bureau of Standards as a result of the recent enactment by Congress of the National Hydraulic Laboratory Bill. The purpose of the laboratory is "the determination of fundamental data useful in hydraulic research and engineering, including laboratory research relating to the behavior and control of river and harbor waters, the study of hydraulic structures and water flow, and the development and testing of hydraulic instruments and accessories." The measure provides that "any state or political subdivision thereof may obtain a test, study or other work on a problem connected with a project the prosecution of which is under the jurisdiction of such state or political subdivision thereof."

A sum not to exceed $350,000 has been authorized for the purpose of building and equipping a suitable hydraulic laboratory at the present location of the Bureau of Standards in the District of Columbia.

Periodic Improvements of the Water-Supply of a City of 17,000

By W. E. LEEPER
CITY ENGINEER, GASTONIA, N. C.

THE Water Department of the city of Gastonia, N. C., dates from the year of 1900, when a small pumping-station was established on Long Creek about two miles north of the city, and a 6-inch cast iron main was laid to the 350,000-gallon-per-day circular wooden filter built in the town at the same time. A 500,000-gallon clear-water reservoir was also built in the ground at the filter plant at this time. Six years later the plant became too small for the demand for water, and the 6-inch line was replaced with a 12-inch main and the filters were doubled. This equipment proved sufficient for the demand until 1914, when a small impounding reservoir holding about 7½ million gallons was built at the creek pumping-station. Then, instead of pumping direct from the creek to town, the water was first pumped into the impounding reservoir and allowed to stand before being pumped to the filters. In 1917 it was found necessary to add another 350,000-gallon circular filter unit to the plant to keep up with the demand for filtered water.

Modern Filter Plant Erected

During 1920 a modern filter plant was built, with Roberts filter equipment and a capacity of 2,000,000 gallons per day, and an elevated tank with a capacity of 350,000 gallons was erected and connected on the mains for storage and pressure. All the wooden filters were discarded when the new plant was put into operation.

Raw-Water Reservoir Enlarged

During the dry summer of 1925 the flow of water in Long Creek got down so near our daily consumption of nearly 2,000,000 gallons that we had to make plans for a new source of supply or a larger raw-water storage reservoir. We decided to build a larger storage reservoir instead of changing to a larger stream, because the water in Long Creek was so much better than that of any of the larger streams near.

Surveys were made during the latter part of 1927, and the city bought a tract of land having a 75-acre bottom in a valley on Long Creek above the old pumping-station. The surveys showed that by building a 15-foot earth dike across the creek end of this valley parallel with the creek and enclosing the 75 acres of bottoms, we should get enough storage to supply our needs.

In the spring of 1928 the city let the contract for building this earth dike. The dike was 3,600 feet long, 10 feet across the top, and the sides on a slope of 2:1, and contained 80,000 cubic yards of earth. All the top of the ground under the dike was stripped of vegetation and

THE NEW 1,000,000-GALLON COLE STEEL TANK IN GASTONIA

The water line of the tank is 183 feet above the ground

thoroughly ploughed longitudinally to give bond to the new dirt before any of the fill was made. The earth fill was then put on in layers of one foot in thickness and thoroughly compacted. A roller was not used, as the contractor was hauling the dirt over the new fill with a Caterpillar 60 tractor outfit with 11-yard dump-wagons and 2-yard trucks, and this gave the new fill enough compression. After the dike was built, the outside of the fill was thoroughly riprapped with stone to a height above the high-water level of the creek during floods, and riprap was also placed on the inside to a point 3 feet above the proposed water-level.

Before any water was pumped into the new reservoir, all the bottom was cleared of all vegetable matter and ploughed and harrowed until the soil was thoroughly pulverized and all roots and other objectionable matter taken out. This reservoir when filled to the 12-foot level holds approximately 275,000,000 gallons of water.

New Pumping-Station

At the same time that the dike was being built, the contract was let for a complete pumping-station to be built at the lower end of the dike on the edge of the creek. The building was built of concrete and brick to accommodate both the low-lift pumps for pumping water from the creek to the reservoir and the high-lift pumps for pumping the water from the reservoir to the filter plant in town. In this station there are one 6,000- and one 3,000-gallon-per-minute low-lift pump, and one 1,000-, one 1,500-, and one 2,500-gallon-per-minute high-lift pump. In addition to the three electric motor-driven high-lift pumps, there is one 1,500-gallon-per-minute gasoline-engine-driven high-lift pump used as a stand-by in case of power interruptions.

From the new creek pumping-station to the filter plant, we laid a 20-inch main of Universal cast iron pipe. This line is approximately 12,000 feet in length.

Further Expansion

Last year we added another unit to the filter plant with a capacity of 2,500,000 gallons per day, with chemical mixing house and modern chemical mixing machines, giving a total capacity of 4,500,000 gallons of filtered water per day. A 1,000,000-gallon elevated tank was also erected on the water distribution system about one mile from the filter plant, for additional storage and to equalize pressure on the system.

Service Data

At the present time, we are furnishing water to 23,000 people through 3,000 services on a system of 232,900 feet of cast iron water-mains between the sizes of 4 inches and 20 inches and other smaller lines of galvanized pipe.

In 1926, we standardized on 6-inch pipe as the smallest size of cast iron pipe to be used in the water system, and since that time no more 4-inch cast iron pipe has been laid.

The present bonded indebtedness of the city for water-works improvements is $1,125,500 in long-term bonds that are being retired by property taxes. The

water bills are collected monthly, and the revenue from the sale of water pays the operating expenses of the Department. The city is 100 per cent metered, although 3,000 services may seem small for our population of 23,000. The reason for this is that a number of the cotton mills get the water for all their village through one or two meters and furnish the water to their employees free.

Personnel

The following contractors did the work on the recent water-works improvements: the filter addition was built by the Brown-Harry Co., Gastonia, N. C.; the tank was erected by the R. D. Cole Manufacturing Co., of Newnan, Ga.; the raw water storage reservoir was built by J. B. Hawkins, of Charlotte, N. C.; and the creek pumping-station by A. H. Guion & Co., of Gastonia, N.C.

Ten Years of Successful Garbage Collection

By ALBERT F. SCHULTZ
CITY CLERK, LAPORTE, IND.

IN September, 1920, an ordinance was passed in LaPorte, Ind., designed to promote the public health and welfare of the citizens by regulating the collection, removal and disposition of garbage. This ordinance requires that every owner, tenant, lessee or occupant of any premises within the city where garbage accumulates must provide and keep a suitable and sufficient metallic garbage container, with tightly fitting covers, for his premises. These containers must be of sufficient size and number to receive all the garbage accumulating over a period of five days. The containers are placed immediately adjacent to an alley and where they are easily accessible to the garbage collector. The ordinance further requires that these containers shall be kept clean and covered.

When this ordinance was passed, the city immediately purchased teams, flat-bodied wagons and a 3-ton truck, and a sufficient number of garbage cans to handle all the garbage in the city. The collectors then started out with the wagons and the load of empty cans. As they came to a residence, they took an empty can from the truck or wagon, left it and picked up a full can, and so on until the wagon or truck was filled with loaded cans. The loaded truck then proceeded to a central station, where the garbage was loaded onto a 3-ton truck and hauled out to a garbage farm, to be fed to hogs.

Cans Thoroughly Washed

The farmer owning the hog farm washes the cans at a cost of 2 cents per can for the first 3,000, and 1½ cents for all cans over 3,000. This arrangement was made by a contract entered into with the farmer on bids for the disposal of garbage and the washing of the cans. The farm which now handles the garbage is 6 miles from the city, and the farmer has equipped himself with a large boiler and wash tank and has rigged up a whirling brush run by a gas engine, which he uses in cleaning out the cans. The solution is a compound which is not injurious to metal cans but cleans them quickly with the help of the brush. In winter when the garbage is frozen in the cans, he first places them in a hot-water tank, which takes but a minute to melt the garbage adjacent to the can, after which it is dumped easily. There is usually plenty of time between the arrival of one truck and the next for the farmer to completely scour the cans from the first truck, which are loaded onto the second one in place of the full ones delivered.

The citizens purchased the first standard cans themselves, and the city replaces them. In the residential district a uniform can of 8 gallons is used, and in the business district a 20-gallon can is used, all of uniform size, so that they may be readily stacked on the wagons. There is an ordinance requiring a certain type of can, so that a citizen cannot purchase a cheap can that will not stand the wear, but must purchase the standard can used by the city. No other can is picked up by the collectors.

No Refuse Permitted in Garbage Cans

No paper, glass, tin cans, water or matter injurious to hogs may be placed in the garbage can. There is, however, a rubbish and ash system operated similarly to the garbage collection system by the city to take care of all other refuse. The expense of operating both collection systems is paid by taxation.

The city of LaPorte has worked this system out very well indeed, so that in the collection of garbage or rubbish the material collected is not exposed until it reaches the garbage farm or disposal plant. This does away with the old obnoxious and offensive system of dumping garbage cans into open wagons within the city limits.

Change in Store Hours Recommended After Traffic Count

ON the basis of a traffic count of persons going in and out of 79 office buildings and 25 of the largest stores in San Francisco last fall, the San Francisco Traffic Survey Committee has recommended to the stores a change from the present 9 o'clock opening and 5:30 closing hours to a 9:30 opening and a 6 o'clock closing.

The traffic count was made in ten-minute intervals from 8 in the morning until 6 in the evening, and gave a total of 371,342 persons in and out of office buildings, and a total of 246,258 persons in and out of stores. The population of the buildings represented in the count was about 50,000, and it is estimated that at least an equal number of persons employed in small and scattered office buildings in the business district were not counted.

From the counts, curves were made showing the fluctuation of traffic by ten-minute intervals throughout the day for both the stores and the office buildings. It was demonstrated by these curves that the morning traffic for the stores was very low before ten o'clock and that the evening traffic was low after five o'clock, whereas the noon traffic was very high and formed a decided peak. The office-building traffic was of course high in the morning, in the noon hour and in the evening, but the greatest peak was in the evening. From a comparison of the curves, it was shown that the stores received the benefit of the office-building peak at noon, as they showed a corresponding peak of their own at this time, but that they did not receive the benefit of the office-building peak in the evening, as their hours of closing were only a half-hour later than those of the office buildings.

The Traffic Survey Committee hopes that as a result of these comparisons and conclusions the stores will be convinced that the recommended change to a 9:30 opening and a 6:00 o'clock closing will be desirable from a merchandising standpoint as well as from the standpoint of reducing traffic congestion by stretching the morning and evening peaks over a longer period of time.

A Progressive City Street-Lighting Program

By F. R. LANAGAN
CITY ENGINEER, SCHENECTADY, N. Y.

IN his book, "The Mansions of Philosophy," Will Durant described the steps man has taken in climbing up from savagery. The first step mentioned is Speech. The second step is Fire, of which he writes: "For fire made man independent of climate, tempered his tools to hardness, and offered him, as food, a thousand things inedible before. Not least of all it made him master of the night. Picture the dark before man conquered it; even now the terrors of that primitive abyss survive in our blood. Once every twilight was a tragedy, and man crept into his cave at sunset trembling with fear. Now the night is overspread with a billion man-made stars and the spirit of man is free. We shall never be grateful enough for light."

In these words Mr. Durant has stated the case most clearly. The means provided by nature for night illumination of public streets is insufficient, except on rare occasions when there is a full moon in a cloudless sky, and even then the hours of moonshine may not coincide with the activities of mankind. Enlightened and progressive humans have therefore used various expedients to supplement nature and these have progressed from open fires, pine torches, lanterns, kerosene lamps and gas lights to the modern electric light.

Photographs by courtesy of New York Power & Light Corporation

UNION STREET, SCHENECTADY, N. Y., SHOWING LIGHTING FOR PRIMARY TRAFFIC STREETS, USING ORNAMENTAL UPRIGHT STANDARDS

Good Lighting a Great Civic Asset

Originally the basic reason for street lighting was protection, but today it is the foundation on which all our nocturnal activities depend. Good street lighting means a better, safer and cleaner city, enhanced property values and civic progress, and it increases the amenities of urban living in many ways. It is one of a city's greatest assets, and may well be termed a sanitary measure, as well-lighted streets are kept cleaner and are less abused by those whom darkness aids.

Good lighting may also be termed a measure of public safety. Statistics given in the Report of Motor Vehicle Accidents, Bureau of Motor Vehicles of the State of New York for the year 1928 indicate that out of 79,317 non-fatal accidents, 43.6 per cent occurred during the hours of dusk and night. Out of 2,247 fatal accidents, 49.4 per cent occurred during the hours of dusk and night.

ANOTHER PORTION OF UNION STREET; LIGHTING OF PRIMARY TRAFFIC STREET BY MEANS OF PENDENT UNITS

When it is borne in mind that the number of motor vehicles used during daylight far exceeds the number used during night hours, one can appreciate the significance of this record. In other words, one can say that many more accidents and fatalities occur in proportion to the number of motor vehicles in use during the hours of dusk and night than during the hours of daylight. Thus public safety requires city and village streets to be adequately lighted if hazards of life and limb are to be kept to a minimum. . . .

Many progressive cities are expending thousands of dollars in preparing and executing plans for public betterments, yet seldom do these plans include a comprehensive street-lighting system for the entire city. In most cities it is a case of adding a light or two here or there when there is a complaint about insufficient light.

Street lighting in a community is an annual operating cost and the funds required to pay this cost are included in the annual budget and raised by taxation. Unless municipal officials and civic organizations point out the wisdom and necessity of installing a comprehensive street-lighting system and see to it that sufficient funds are provided for such a system in the annual budgets, a community misses steps in the march of progress.

Haphazard Growth

Until recently Schenectady's street lighting, like that of many other cities, grew a little here and a little there. One night experiments were conducted on some of the Schenectady streets that were not well lighted; and these experiments proved that automobile headlights could not make visible a darkly clothed pedestrian in the roadway, thus disproving the belief that though certain streets were dimly lighted, headlights would overcome the deficiency and insure safety. It was found that these streets are actually dangerous at night on account of the poor illumination.

As a result of these experiments demonstrating the inadequacy of the existing system of street illumination—a system not particularly creditable to the "Electric City"—a study and survey were made with the idea of laying out the whole city in a properly lighted manner. In this study the Department of Public Works of the city had the

ERIE BOULEVARD, SCHENECTADY, SHOWING TYPE OF LIGHTING FOR PRIMARY BUSINESS STREETS (LEFT) DAYTIME VIEW OF STANDARD

hearty cooperation of the Common Council Committee on Lamps, and the valued technical assistance of A. F. Dickerson of the Lighting Laboratory of the General Electric Company, of L. C. Smith, local General Manager, and H. S. Beagle, Lighting Specialist, of the New York Power and Light Corporation, and Charles R. Vannerman, Chief Engineer of the State Public Service Commission.

An Ordinance Based on Thorough Study

As a result of this collaboration an ordinance was prepared, and subsequently adopted on May 21, 1929, by the Common Council. This ordinance, for lighting classification purposes, divided the streets of the city into the following six classes:

A. Primary Business Streets
B. Secondary Business Streets
C. Primary Traffic Arteries
D. Secondary Traffic Arteries
E. Primary Residential Streets and Park Drives
F. Secondary Residential and other streets

The names of these classes are self-descriptive. Streets were classified as to what they would probably be in five years rather than what they were at the time of the survey.

The ordinance also established the type of lamp, the approximate mounting height, the spacing of lamps, the lumens per linear feet of street and the type of wiring (overhead or underground in conduits) for each of the several classes of streets.

The ordinance also provided that the comprehensive street-lighting system should be installed and operated according to a five-year program, and the order in which the installation of lamps should take place was established by listing the streets by name under each year, commencing in 1929 and continuing in 1930, 1931, 1932 and 1933 in the expectation that at the end of 1933 the comprehensive system will have been completed and in operation.

The Use of Maps

For the purpose of visualizing the street-lighting program, a street map of the city was used as a medium to show each of the six classes of streets in a distinctive color. The proper illumination for each class of street, and the type of standard and fixture to be used, were printed in a tabulation on the map.

Another street map was used as a medium to show what might be termed a "progress" map. Those streets which seemed to be more nearly adequately lighted at the present time were shown in one color and the streets on which the lights were scheduled to be installed in 1930, 1931, 1932 and 1933 were each filled in with other and contrasting colors.

LIGHTING STANDARD FOR SECONDARY BUSINESS STREETS

Street maps so prepared presented the comprehensive program in such a manner that members of the Common Council, civic organizations and citizens could quickly grasp the meaning and extent of the whole program.

A Comprehensive Five-Year Program

With this clear graphic presentation of the program no opposition developed at the public hearing held upon the lighting ordinance by the Common Council and when the roll was called on the adoption of the ordinance, the vote of the alderman was unanimous. Thus the city is committed to a program of adequate street lighting which will take five years to install. A gradually increased appropriation will have to be made each year until and including 1933 and then the annual increase will simply be for lights placed upon newly opened streets.

It has been the tendency in Schenectady as in many other cities to go on from year to year appropriating the same amount for street lighting, and to get any additional appropriation is very hard. With a definite program before them to which they are committed, the

CLASSIFICATION OF STREETS AND LIGHTING

Class of Street	Type of Lamp	Approx. Mounting Height Feet	Approx. Linear Ft. of Street per Lamp	Approx. Lumens per Linear Ft. of Street	Type of Wiring
A. Primary Business	6.6-amp. ornamental luminous arc lamp. 2 lamps per standard.	20	40-60 (per standard) 2 lamps	585-825	Underground
B. Secondary Business	6.6-amp. ornamental luminous arc lamp or 15,000-lumen (1,500-cp.) Mazda lamp in Novalux upright fixture.	15-18	60-80	175-250	Underground
C. Primary Traffic	10,000-lumen (1,000-cp.) Mazda lamp in pendent Novalux fixture.	0	100-150	60-100	Underground or Overhead
D. Secondary Traffic	6,000-lumen (600-cp.) Mazda lamp in pendent Novalux fixture, or	20	100-150	40-60	Underground or Overhead
	in upright Novalux fixture on ornamental pole.	15-18	100-150	40-60	Underground
E. Primary Residential and Park Drives	2,500-lumen (250-cp.) Mazda lamp in upright Novalux fixture on ornamental pole.	12-15	80-160	15-30	Underground
F. Secondary Residential and other streets	2,500-lumen (250-cp.) Mazda lamp in pendent Novalux fixture or 4-amp. pendent luminous arc lamp.	16-20	100-250	10-25	Overhead
		18-25	200-400	10-25	Overhead

Common Council sees the logic of the increase in the appropriation for street lighting for each of the five years it will take to complete it. This does away with possible misunderstanding over the amount to be spent each year.

Under the comprehensive street-lighting program the city will profit by getting the maximum efficiency from every light. Each unit will be specially adapted to its location and correctly placed. The city is really buying seeing-ability on its streets and it receives the maximum results from the money expended.

For Schenectady in 1929, when admittedly the streets were inadequately lighted, it cost 3.4 cents of every dollar for street lighting. In 1929 after a decade of tremendous expansion in motor transportation and consequent increase in night accidents, it cost 4.5 cents of every tax dollar for street lighting. Upon completion of the comprehensive street-lighting program in 1933, it is estimated that the cost of street lighting will be 7.0 cents out of every tax dollar.

LIGHTING STANDARD FOR PRIMARY RESIDENTIAL STREET IN SCHENECTADY, N. Y.

This is not an unduly large increase. The saving of the life of one person would justify the expense, but proper and adequate street lighting is insurance which saves several lives, saves many from serious injury and reduces property damage. A survey of the street lighting in Cleveland indicates that proper lighting of all the streets would save 33 lives each year, or 39 per cent of the total killed in automobile night accidents.

The foregoing are some of the reasons and considerations which led to the adoption of the five-year program for a comprehensive street-lighting system in Schenectady and it is hoped that this description may be helpful to civic leaders in other progressive communities.

—From a radio address recently given over WGY, Schenectady, under the auspices of the Schenectady Bureau of Municipal Research and the New York State Conference of Mayors and Other Municipal Officials.

Washing the Streets of Ann Arbor, Mich.

By ALFRED J. PAUL
SUPERINTENDENT OF PUBLIC WORKS

THE city of Ann Arbor, Mich., has a population of 40,000 and, as it is a college town, this includes 11,000 students, who might be termed a floating population, in residence nine months of each year. There are 35 miles of paved streets within the corporate limits of the city.

One 1,500-gallon Municipal Supply Co. "South Bend" flusher and one Elgin motor pick-up sweeper comprise the mechanical equipment for street cleaning. The sweeper and flusher start operating at 2 A.M. The business district is swept and flushed every morning, and then the flusher follows the sweeper and completes the cleaning of the section at about 6 A.M. The pavements in the residence district are swept and flushed two or three times a week with very satisfactory results.

The sweeper operator dumps the sweepings at different convenient places and a 2-yard Graham truck follows and picks up the sweepings and hauls them to the nearest dump, or at times dumps them in lots that need filling. Ann Arbor employs no white wings to clean up the paved streets. The motor pick-up sweeper with a gutter broom attachment does all the work which the white wings used to do. Two men are employed at odd times to clean up the pavement ends where there is a connection with dirt streets and stones and dirt are washed onto the pavement.

During 1929 it cost $8,145.83 to clean the paved streets of Ann Arbor. This figure includes both sweeping and flushing.

ITEMIZED COST OF STREET CLEANING

Sweeper operator	$1,490.80
Sweeper maintenance and repair	645.85
Gasoline	259.92
Oil	20.34
Gutter broom and materials	179.18
Pick-up brooms	806.21
Hauling sweepings	675.08
White wings	198.53
Spring clean-up of pavements	605.33
Picking up and hauling leaves	648.06
Cleaning alleys	99.03
	$5,628.33

FLUSHING PAVED STREETS

Flusher operator	$1,045.00
Gas and oil	475.43
Maintenance and repair	518.74
Water used	478.33
	$2,517.50
Total cost of sweeping and flushing	$8,145.83

The operators on the sweeper and flusher report daily the number of miles of pavement swept, the gas and oil used in the operation, and the time spent in cleaning up the machines, oiling and greasing, which is charged to maintenance. The sweeper and flusher operate nine hours every day when weather conditions are favorable. Since Ann Arbor is situated where winter and cold weather come about December 1, it is safely figured that the sweeper is laid up three or four months each year. During the winter months all the cleaning is done by hand brooming when possible.

The cost per mile for street cleaning with the sweeper is $160.81, and figuring in the cost of flushing raises this to $232.73 per mile.

From the sanitary standpoint, the system of sweeping pavements with a pick-up sweeper and following with a flusher has given the most satisfactory results. The small amount of fine dirt that is left by the sweeper is flushed directly into the storm sewers. We have often been asked whether our sewer catch-basins ever get clogged or filled up. There are no catch-basins in Ann Arbor, as the storm-sewer outlets are connected direct to the main storm sewer, and thus far we have had no clogged inlets. Occasionally one inlet will get filled up during a storm, in which case the flusher is taken out and direct pressure applied to the inlet to clean it thoroughly.

Two Imhoff Tanks with Sprinkling Filters at Trinidad, Colorado

By JOSEPH P. BACCA,
ASSOC. M. AM. SOC. C. E.;
CITY AND COUNTY ENGINEER

THE sewerage system of Trinidad, Colo., is estimated to serve 10,000 people. There are two outfalls in the system, one known as the South Side outfall, on the south bank of the Purgatoire River, a distance of 1,000 feet from the east city limits, and the other known as the North Side outfall, north of the Atchison, Topeka & Santa Fe Railroad, a distance of some 1,500 feet from the northeast city limits.

The sewers comprise 5,420 feet of 6-inch vitrified sewer tile, 55,880 feet of 8-inch tile, 34,040 feet of 10-inch tile, 9,112 feet of 12-inch tile, 14,294 feet of 15-inch tile and 120 feet of 16-inch tile, with 265 brick and concrete manholes and 13 flush-tanks.

Sewage Treatment Plants

There are two separate sewage treatment units, one at the North Side outfall and the other at the South Side outfall. Each plant consists of an Imhoff tank, a sprinkler and filter house, a sludge bed and a chlorination house. Sewage is mainly domestic with only a slight amount of industrial and trade wastes.

The Imhoff tank in each unit is a two-story hydrolytic tank, having a length of 37 feet 6 inches, a width of 24 feet 6 inches, and a total height of 29 feet. All portions of the tank below the sewage line are constructed of reinforced concrete. Each tank is equipped with two siphon chambers 20 feet in height and 4 feet in diameter, which remove the digested sludge from the Imhoff tank to the sludge bed. At present the sprinkler house is in operation an average of about once every 40 minutes, spraying the clear effluent from the Imhoff tank. The period of detention of the sludge in each tank is about 90 days, at which time it is removed to the sludge bed.

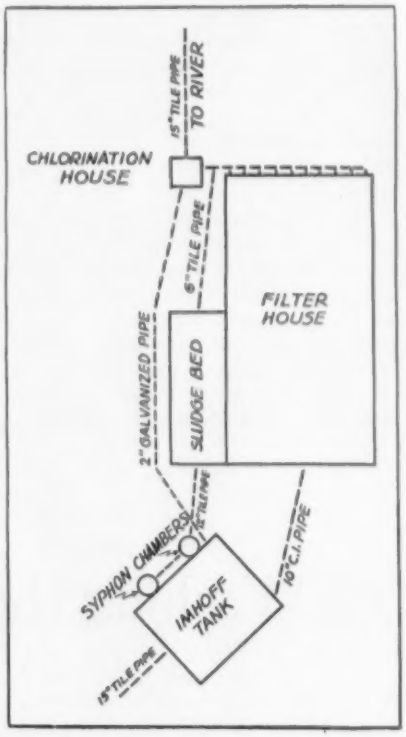
The sprinkler and filter house in each unit is 52 feet 3 inches wide by 101 feet in length. It has a filter bed depth of 8 feet, with 3 feet of stones 6 to 8 inches in diameter at the bottom, covered by 2 feet of crushed gravel varying in diameter from 2 to 6 inches, and topped by 3 feet of coke breeze varying in size from ½ to 1½ inches.

There are four separate sprinkler lines from the main line in each sprinkler house, each line being equipped with twenty Taylor nozzles, making a total of 80 nozzles in each house.

The filter house sub-drains under the filter bed consist of 6-inch vitrified sewer tile with open joints, with the bottom of the bells broken off and laid longitudinally on 36-inch centers. These drains empty into a transverse concrete drain outside the filter house, thence leading into the chlorinating house. At present the chlorinating house is not used, the clear liquid effluent being by-passed around it into the Purgatoire River. It is a building 10 feet square and 9 feet in height, having a sump 8 feet in depth and 3 feet wide, containing chlorinating control apparatus and chlorine tanks with diffusers.

Sludge Beds

The sludge bed in each unit has a depth of 3 feet 6 inches, a width of 20 feet and a length of 50 feet. It is constructed of concrete and is made up of 6-inch vitrified sewer tile extending longitudinally through the center of the tank at the bottom, covered by a 9-inch layer of gravel and a 9-inch layer of sand on top. Each unit is designed to take care of a population of 10,000. The average daily flow at the South Side plant at present is 1.6 second-feet throughout the year and at the North Side plant 1.3 second-feet. The maximum daily flow is 1.9 second-feet from the South Side plant and 1.5 second-feet from the North Side plant.



LAYOUT OF THE TWO SEWAGE TREATMENT PLANTS AT TRINIDAD, COLO.

The sludge is disposed of by removal from the vicinity of the plant and dumping where most convenient, dumping into the river being prohibited. Farmers and gardeners near the plants use all the dried sludge and report excellent results. Many home owners in the city secure the sludge for fertilization of flower gardens.

Operation

One man is constantly employed to take care of the Imhoff tanks and sewage treatment units at both plants, any additional help being secured from the water-works department of the city.

VIEW OF NORTH SIDE DISPOSAL PLANT FROM THE NORTHEAST, SHOWING SOUTH SIDE PLANT ACROSS THE VALLEY

Profits from Highway Construction in Indo-China

By KING HAMILTON GRAYSON
and
E. H. TURPINAT

IN THE PROVINCE OF COCHIN-CHINA, WHERE THERE ARE 3,600 MILES OF ROADS EQUAL TO THOSE FOUND ANYWHERE

WHEN the French engineers started to construct highways in Indo-China they gave serious consideration in their surveys to future tourist trade and to motor transportation of native products, resulting in an unusual highway system in that corner of the world. Today, the existing 9,600 miles of motor roads can all be called "good roads"; economical in upkeep and for transportation, and highly pleasurable for touring. Probably the main incentive behind their construction was a military purpose, but all other uses are profiting from the engineering skill and foresight applied.

Truck Haulage Increases

Hand in hand with highway development has been that of agriculture, and at present a large percentage of the 1,600,000 tons of rice and the 50,000 tons of maize for export is transported by motor truck to the ports of loading or to the railways for transshipment. In addition, the rubber plantations are increasing in acreage and tonnage, the mines are constantly expanding, and each has a direct bearing on highway transportation and lasting construction. France, for which Indo-China is a much prized possession, is profiting from this investment in engineering skill and proper highway construction. All these roads have an average width of 19.5 feet and are built to carry a load of 9 tons. Three types of transport use the roads continuously—motor cars, trucks, and busses; buffalo carts; and elephants, all for passenger as well as freight service. In fact, for the tourist trade there is keen competition among the three.

Highways Essential to Complete Rail Transportation

The 1,233.6 miles of railroads are still incomplete, and motor transportation is often necessary to go from one railroad's end to another's beginning. The entire country is in the monsoon belt, necessitating good motor roads to meet this condition of missing rail links. The progress of motor-car development has been so steady that there is now an automobile in use for nearly every 0.6-mile of highway. This is particularly true in the province of Cochin-China, where there are 3,600 miles of roads equal to those found anywhere. Motor service has become highly developed on account of the tourist traffic, which is bringing an ever-increasing income to the territory, and those who traverse the highway from Pnompeh to Kep are invariably loud in their praises of the magnificent boulevard which has been developed. The same is true with the streets of the larger cities, where the boulevards should excite the envy of the world.

Hanoi, the capital city of the Province of Tonkin, boasts many beautiful avenues leading to an endless number of interesting sites. And 45 miles distant from the capital are half a dozen shrines which have been made the highway objective by the French engineers to attract visitors. Two hours away from Hanoi by motor, at an altitude of 3,000 feet, is the popular resort of Tani-Dao, which is highly patronized because of the magnificent boulevard leading to it. From Vinh-Yen over the "Road of the Four Columns" to Hanoi is another perfect motor ribbon 29.5 miles long, and one 40 miles in length by way of Son-Tay, Phu-Lo and Phuc-Yen. Tam-Dao is 45 miles by motor from the capital, and despite the fact that the grade is 16 per cent in many places, an enviable highway has been constructed, solely for motor use, as neither buffalo carts nor elephants are economical for transportation. In connection with the highway development program, that of a state subventioned motor service was created for the protection of tourists, and to provide adequate service.

The native population has been very slow to adopt modern methods, and the French officials and business men are trying to overcome this for the further development of the interior through creating model rice farms, maize plantations, and other improved industries. Several hundred thousand acres are included in new agricultural projects just being completed, which now require an

THE NATIVE POPULATION HAS BEEN SLOW TO ADOPT MODERN METHODS
Business men are trying to overcome this by further development of roads to the interior. American-built trucks on a newly built road are shown in the photograph

extension of the highways to provide transportation lanes for crops.

Tourist Value of Roads

On every hand in Indo-China one is impressed by the fact that the French engineers gave exceptional consideration to the tourist value of the roads. At Haiphong, on the Bay of Along, the boulevards have all been planned to lure the traveler to reside awhile and spend his money. In addition, they took into consideration the natural resources and their development, and future application of motor highways. This was necessary to a certain extent to attract colonists and officials for French commercial and industrial interests to make their homes in the Orient under conditions which would create a desire to remain.

Profit in First-Class Highways

The climate of Indo-China is intertropical, damp and hot, and highways have become a necessary adjunct to health, especially on nights when everyone is gasping for breath and motoring is the only relief. All these climatic conditions had their part in the planning and construction of the highways, a condition not often taken into consideration in other corners of the world. It was costly at the start to construct highways for three distinct types of transport, none of which can have the right-of-way, and with varying loads that test road foundations, but France is profiting today from every dollar expended on the construction. The United States is gaining a share through the importation of automobiles, trucks and busses, which have found favor over many types of European cars. This also applies to road-making machinery, although modern equipment of this character is often deserted by the contractors when native labor is plentiful.

The highway development in Siam combined with that of Indo-China now promises international connecting links which, in a few years, will provide continuous highways from Hanoi to Singapore, and thence with the development of the Indian roads now planned, a transcontinental motor route with its ultimate terminus in European capitals.

Proportional Representation Critically Analyzed

PROPORTIONAL representation has had a considerable experience in Europe, and twenty-five cities in the United States and Canada have had some practice with in the last two decades. The discussion in America of its merits has, however, remained in the realm of theory and it has been largely *ex parte*. The opponents of P. R. have been the intrenched political machine. They have opposed it largely because it is new to them and they feared it. Often their arguments, if any, have been puerile and their opposition the best, or most effective, argument in its favor. Professor Joseph P. Harris, of the University of Wisconsin, has made a careful study of its practical results. His conclusions, published as a supplement to the May *National Municipal Review*, will be of interest to all charter makers.

Professor Harris finds little justification for the claim that P. R. increases the effectiveness of votes. His statistical analysis reveals very little superiority for P. R. over election under the ward and at large systems, except where second or later choices are added. He queries whether the voter whose candidate is defeated is unrepresented. The claims as to the representative character of P. R. councils he finds confused and contradicting, but he concludes that they are in substantial measure justified. He finds that P. R. neither stimulates nor checks racial, religious or party voting or voting generally. "A good administration and general satisfaction" he sagely adds, "are not conducive to heavy voting." Perhaps his most damaging conclusion is that few voters understand the system and that it is unpopular with them. He quotes Newton D. Baker as saying: "There are said to be a few people in Cleveland who understand the system, but I must confess that I have not been able to find them." Dr. Harris' survey has been painstaking and unprejudiced. His conclusions are worth considering. He says, in part:

Citizenship Backing Needed

"It is a mistake to assume that proportional representation, or any other electoral device, will of itself revolutionize the political life of a community. Proportional representation facilitates the election of the real leaders of a city to the city council, works with absolute fairness to the various groups in the election, guarantees minority representation as well as majority control, and, most important of all makes it feasible for non-partisan citizens interested in securing good government to form a civic organization which will draft capable candidates and secure their election. No method of election can do other than choose from the candidates who stand, and if the candidates are incapable, the councilmen will be unsatisfactory. Where P. R. has been a decided success, a Charter Committee (Cincinnati), Charter Commission (Hamilton), Civic Government Association (Calgary), or Progressive Government Association (Cleveland in the last election) has been formed to make it a success.

"No city of any considerable size can hope to have, except for brief periods, a council consisting of the real leaders of the city, without some organization of this kind. No self-respecting organization, economic or social, holds an election without making use of a nomination committee. Heretofore, the political parties have been the nominating committee, with results satisfactory to the party organizations. Under the ward system of election it is quite out of the question for a civic organization to function effectively in drafting satisfactory candidates for the council. Under the election-at-large method it is ordinarily impracticable, for unless the civic organization can secure a majority of all votes cast from the very start, it will secure no representation in council, and cannot survive. Capable candidates cannot be drafted for public office without a pretty definite assurance that they will stand a good chance to be elected. Under P. R. a non-partisan citizens' organization is sure of securing some representation, from the very start, and this makes it possible to persuade outstanding persons to run for office."

Small Councils Advocated

Dr. Harris proposes a return to the original Hare quota, which is simply the number of votes cast divided by the number of positions to be filled. If there are nine councilmen to be elected, the quota is one-ninth of the total vote. This is easily explained and easily understood and remembered. The average voter can see some sense to this. He also endorses the proposed Philadelphia charter which provides that as soon as a candidate receives the quota, he shall be declared elected, and no further votes shall be counted for him. The order in which the precincts are counted would be determined by lot. Proportional representation, he proposes, should be rechristened as *choice* voting. His most important recommendation is that city councils be kept small, no matter what device is used. "Large councils," he says (and rightly, we think), "do not attract first-class candidates."

—JOSEPH McGOLDRICK.

Motorized Maintenance for County Highways

A Check-List for the County Commissioner and Engineer to Use to Determine the Effectiveness of the County's Maintenance Equipment

LABOR is no longer the dominant factor in road maintenance. One of the most outstanding developments of maintenance repair work in recent years is the tremendous increase in the use of motorized equipment. The laborer with his pick and shovel and wheelbarrow, and the farmer with his horses and mules, have almost given up the field to motorized machines. This increase in the amount of equipment operated by any present-day county highway maintenance organization was discussed admirably in the recent report of the Sub-Committee on Equipment of the County Highway Officials Division of the American Road Builders' Association; E. L. Gates, County Superintendent of Highways, DuPage County, Wheaton, Ill., Chairman.

The Power Grader

The power grader occupies the place of major importance among recent developments in road-maintenance equipment. This machine is in reality a combination of the conventional blade grader and gasoline motive power which reduces by half the labor needed for operation. Although the power grader can be used to good advantage in the maintenance of earth or gravel surfaces, it has not yet proved satisfactory for actual grading operations except in light work and under favorable conditions.

There are several types of the power or motor grader in use today, which differ principally in the type of traction provided, the location of the scarifier and the position of the operator's seat. The traction may be either wheel or crawler type. For ordinary maintenance work, the wheel type is the more practical. The crawler track is recommended only on earth roads which become slippery after each rain, since this type of track involves additional expense, both in the purchase price and in the cost of upkeep. The other items of difference in the various makes on the market consist principally of minor variations in design which are of comparatively small importance.

The greatest measure of success in county road systems—and this applies particularly where funds are short—is found where the old 7- and 8-foot machines pulled by horses or mules have been replaced with the power grader. The cost per day, allowing 20 per cent for depreciation, has been estimated at $16, and one machine will take care of 15 to 30 miles of road, depending on width and traffic. This takes no account of the elimination of the many accidents, sometimes fatal, where team patrols are hit by passing vehicles.

In addition to being an efficient machine for keeping a smooth surface on gravel and stone roads, the power grader can do much of the work on shoulders and ditches without the help of larger equipment, and it is well adapted to light snow removal.

There is a dual-drive motor grader now on the market with four instead of two rear wheels. It is claimed that it has more power and works in softer ground.

Elevating Grader

A light-weight elevating grader has been found particularly adapted for cleaning ditches in sections where the topography is not too rough. The material excavated is loaded directly into dump-trucks and deposited on fills where needed at about half the cost of any other method.

Road Drags

It is a far cry from the split-log drag to some of the elaborate heavy road hones or planers now in use. No piece of equipment will take the place of the long, heavy drag for making smooth and keeping smooth untreated surfaces. It is an important feature in the scheme of road maintenance conducted by many counties.

From New Mexico, "where funds are short and roads are long," comes a report of good results with a special high-speed maintainer with V blades at 30 degrees, and straight blades so built that it can be pulled at 10 to 12 miles per hour, and more under favorable conditions without chatter. It is claimed that two such machines pulled by trucks can cover 80 to 120 miles a day.

Connecticut uses a steel drag for smoothing bituminous macadam roads as part of the operation of applying a bituminous surface treatment. It consists of two steel I-beams 10 feet in length with ¾-inch cutting teeth on the forward stretcher and cutting edges on three other stretchers, the total weight being 1,600 pounds. Great results in smoother macadam surfaces are credited to this machine.

Sound Advice

1. In the purchase of equipment, the best policy is to buy on merit and the reliability of the manufacturer. The cheapest is seldom the best. "Buy the best equipment and hire the best operators."

2. The motor patrol grader shows considerable economy over teams.

3. Trucks, almost without exception, will do the hauling cheaper than teams.

4. For the production and hauling of materials, the contract system will generally prove more economical than the purchase of equipment and operation by county officials.

5. Expensive equipment should not be purchased unless it will work sufficient days in the year to more than pay for itself.

6. Neither trucks nor rollers should be used as tractors.

7. The trend is toward the use of heavier tractors with greater power, entailing larger and stronger road graders.

8. Tractors of the wheel type are more economical under good road conditions, but caterpillars are more capable of performing where wheel types are helpless. In other words, use wheel type for surface work and caterpiliar for earth moving.

9. Equipment for narrow county and township roads is limited as to width on account of traffic and narrow bridges.

10. Frequent inspection in the field by a competent traveling mechanic is one way to get the most out of equipment; another is the enforcement of the policy of having one man only operate the same machine; and another is the practice of greasing and inspecting at the end of each day's work.

11. Those counties stand out where all road machinery is kept clean, in good repair and neat in appearance.

The Air-Compressor

The air-compressor mounted on a high-speed chassis is one of the handiest pieces of equipment found on maintenance work. The possibilities for development of tools to enlarge the service given by compressed air are indeed great. In addition to the conventional jack-hammer paving breaker, riveting hammer, drill, chisel and saw, we have the paint spray and sand-blast machines, the concrete pavement surfacer for cutting down high spots on concrete pavements, the hand finisher for removing form marks from concrete surfaces, the light, portable air hoist, and other applications of air power. The pneumatic tamper consolidates back-fill that could not be touched with hand tampers, and one man with it will do ten times as much work as by hand. Paving breakers will enable one man to do five times as much work as possible with a pick.

Crushing Plants

Although crushing plants built up of several individual units have been in use for years in connection with the utilization of gravel or stone deposits, we have now a simplification and combination of these various units into what is in reality a complete plant mounted on wheels and in this way made readily portable without any dismantling being necessary. The elimination of expense in connection with the setting-up of the plant, together with a more economical operating cost, makes the use of this unit advisable where a considerable amount of material must be produced from several different pit or quarry locations.

These units have a capacity of 150 to 300 cubic yards of gravel per day, and cost, together with power and power drag scraper, from $12,000 to $13,000.

There is a small combined tractor crusher outfit now being manufactured for crushing material dumped along the road where required. It has a capacity of 50 to 70 cubic yards per day and can be moved quickly and without dismantling.

Trucks and Tractors

Nothing has ever happened to so much promote the use of equipment on highways, especially the use of trucks, as the distribution of the large amount of surplus war equipment. This surplus of trucks led to many ordinarily uneconomic practices, such as using trucks where tractors were more suitable. And that is being done even today in some instances. Trucks have practically banished team hauling from our highways, because they do the job for less money. And conditions, as reported from many localities, indicate that with the low prices hauling contractors are offering, counties cannot afford to do anything but contract their hauling rather than buy trucks for that purpose.

Recent developments in connection with motor trucks are the three-way dump body—dual drive rear wheels—the general use of the electric starter, four-wheel brakes, closed bodies and other refinements which originally appeared on passenger cars.

There was a time when extremely heavy equipment was very popular for general hauling work; but within the past few years there has been a pronounced trend towards lighter, high-speed equipment. On the other hand, the trend in the tractor field has been in favor of the larger units. Many counties have made the mistake in the past of purchasing too small a tractor.

The back sloper is recommended because wider ditches are secured, surplus dirt may be pulled in or pushed out as needed, and cutting the ditch back slope prevents filling-up of the ditch.

Power Shovels

The use of gasoline power, which was practically limited to propelling vehicles a few years ago, has now been adapted to practically every power need in the highway maintenance field. The steam shovel held out a long time, but now is hopelessly outnumbered.

Very few counties can afford to own a power shovel of large capacity. Fortunately, however, shovels of ⅓- to ½-cubic yard capacity have now been perfected. They are decidedly superior to any other piece of equipment for moving slides; cutting off points to increase sight distance; and for other operations connected with routine maintenance work. And, not their least advantage, they can be moved without ruining pavements and breaking down bridges.

Miscellaneous Equipment

Many pieces of equipment excellent for repair work are as follows:

The one- or two-sack concrete mixer equipped with automatic measuring device on high-speed chassis for quick movement from place to place.

Conveying and handling equipment, such as belt conveyors, which are low in cost, considering their high capacity, suitable for unloading railroad cars; one kind that requires no pit under the track; and also for handling material in pits and quarries.

The shaker feeder for belt conveyor feeding a crusher.

One-man operated drag lines capable of handling material for 10 cents per cubic yard up to 600 feet.

Highway mowers, heavier and more suitable for the trying conditions of road work.

A light and compact tank-car heater, quick in action, using kerosene and requiring but a small supply of water per day.

Care of Equipment

One standard complaint against the policy of the public's owning equipment is the allegation that too often it receives poor care and protection from the elements.

With this in mind, wise administrators take great pains to train men in the proper handling and best method of keeping equipment in condition. Schools are frequently held for this purpose. So often it is true that complaints against a piece of equipment can be traced, not to faults in the equipment itself, but to abuse or misuse by untrained operators.

As a safety measure, it is the custom in some localities to paint highway equipment a bright orange color and display plenty of flags and warning signs to protect the workman, the traveler and the machine.

As a matter of sound business policy, a cost record of equipment operation should be kept. A schedule of rentals based upon mileage, character of work, size and life of equipment is frequently used. This daily rental includes both operation and replacement expenses. One system of cost distribution was described in THE AMERICAN CITY for July, 1929.

The necessity of periodic inventory of all equipment is acknowledged by everyone.

Some one person must be made responsible for each piece of equipment and there must be frequent inspections by men competent to detect defects. A traveling field mechanic, well trained, has been found a great help in this regard.

The County Garage

J. F. Coleman, of Georgia, recommends this equipment for a county garage:

1. Burning-in stand (for light motors)
2. Two spindle motor-driven drill presses
3. Air-compressor
4. Every wheel and brush motor-driven
5. Paint spraying outfit
6. Cylinder hone (motor-driven)
7. Electric drill
8. Blacksmith's forge and anvil
9. All necessary small tools and equipment

Any county that owns only a few pieces of equipment is not so poor that as a matter of good business it should not provide a shop of some kind with a good mechanic.

Summary

An engineer and a contractor were looking down on the million-dollar display of equipment at the Road Show of the American Road Builders' Association. Said the engineer, "What would some of our old-time contractors say, if they could come back and look at all

this equipment?" And the contractor, no doubt filled with worries about the next season, remarked: "What I was wondering about is what a fellow would do who owned it all and had no job on which to put it to work."

And that is a good point for county officials to keep in mind when considering the purchase of expensive equipment.

And yet, more and more equipment is displacing labor and as a general rule the newly developed equipment does the job more economically. Not the least advantage is found in keeping down the number of public employees.

We have seen the horse and the mule and the equipment designed for their use practically eliminated from the highway. We have seen hand labor to a very large degree displaced in construction operations, and that very thing is coming with great rapidity on maintenance and repair work.

The quality and design of road machinery has reached high standards of excellence. The time was when much trouble arose from the fact that the manufacturer did not have real practical knowledge of the work the machine had to do. Today, however, complaints about equipment can generally be traced to abuse or misuse by incompetent operators rather than to imperfect design or poor materials.

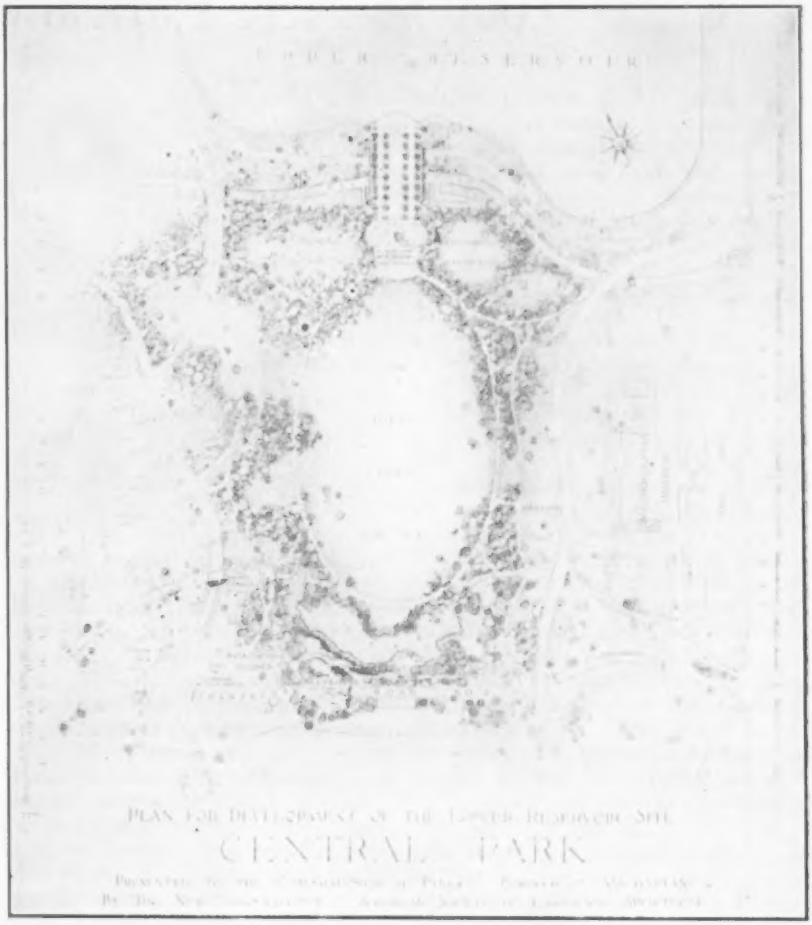
In general, maintenance equipment must be lighter and placed on high-speed running-gear. And there has been much improvement in this respect. Of interest along this line we find the adaptation of roller bearings to practically every bearing point where the use of them is advantageous. We now have roller bearings carrying motor crankshafts, camshafts, and grader wheels, and in many other places where their use cuts down friction and eliminates trouble.

The adaptation of rubber tires to mowing machines, tar-kettles, graders, tractors and many other kinds of equipment is another recent development which has lengthened the life of equipment as well as increasing its efficiency.

We are doing more and more maintenance work in winter. This is because our roads are used more in winter than formerly. Note the popularity of the closed car and the increased use of the motor truck in business. This means that we must provide greater protection against the elements for operators of trucks and graders and for engineers and superintendents who must drive long distances in all kinds of weather.

After all, equipment can never take the place of good judgment and loyalty on the part of the men in a road organization. It is well to remember, however, that intelligent and sympathetic treatment of both will bring big returns in well-kept roads.

A Plan with a History



THE development plan for the old South Reservoir in Central Park, New York City, prepared by the New York Chapter of the American Society of Landscape Architects, represents an act of "sympathy and loyalty to the purpose of the Park Department," and a splendid public welfare service on the part of a distinguished professional organization.

The long-abandoned reservoir was a part of the old Croton water-supply system. Its inclusion in the original park design was not feasible, and it has therefore remained, with its enclosing walls and embankments projecting obtrusively above the surrounding areas of the park for a length of seven blocks. Through efforts of Park Commissioner Walter R. Herrick and other officials, the site of the reservoir was some time ago made possible for park use, and has been partially filled. Several schemes were prepared for treatment of the site, and were submitted to the New York Chapter, American Society of Landscape Architects. This body was unable to give official sanction to any of the plans. Thereupon Commissioner Herrick quite consistently requested that it suggest what was the ideal treatment. This the society volunteered to do at its own expense.

Just how such a group prepared a composite expression in graphic form of the best judgment of its members, is interesting. Volunteers were called for, and each was asked to prepare a preliminary study expressing his own ideas as to the treatment of the area. These were all presented for inspection and discussion by the membership, and a program for further efforts was prepared. Six teams, or committees, were organized, and each left free to prepare a plan in accordance with the program. As a result of these six plans, a definite scheme of design was decided upon, and the responsibility for the final plan was assigned to a committee.

The essential feature of the scheme finally evolved is an oval meadow, slightly depressed, approximately 1,300 feet long and 800 feet wide. The whole is to be in harmony with the surrounding park design, readily accessible to pedestrians and passengers from motor vehicles, and for use by persons of all ages, although primarily a recreation center for the young. The committee responsible for this final plan was headed by A. F. Brinderhoff, and included Gilmore D. Clarke, director of design, Clarence Fowler, John R. Vrinley, Armistead Fitzhugh, and Alfred Geiffert, Jr., President of the New York Chapter.

John D. Rockefeller, Jr., Offers New York City $15,000,000 56-Acre Park and Art Museum

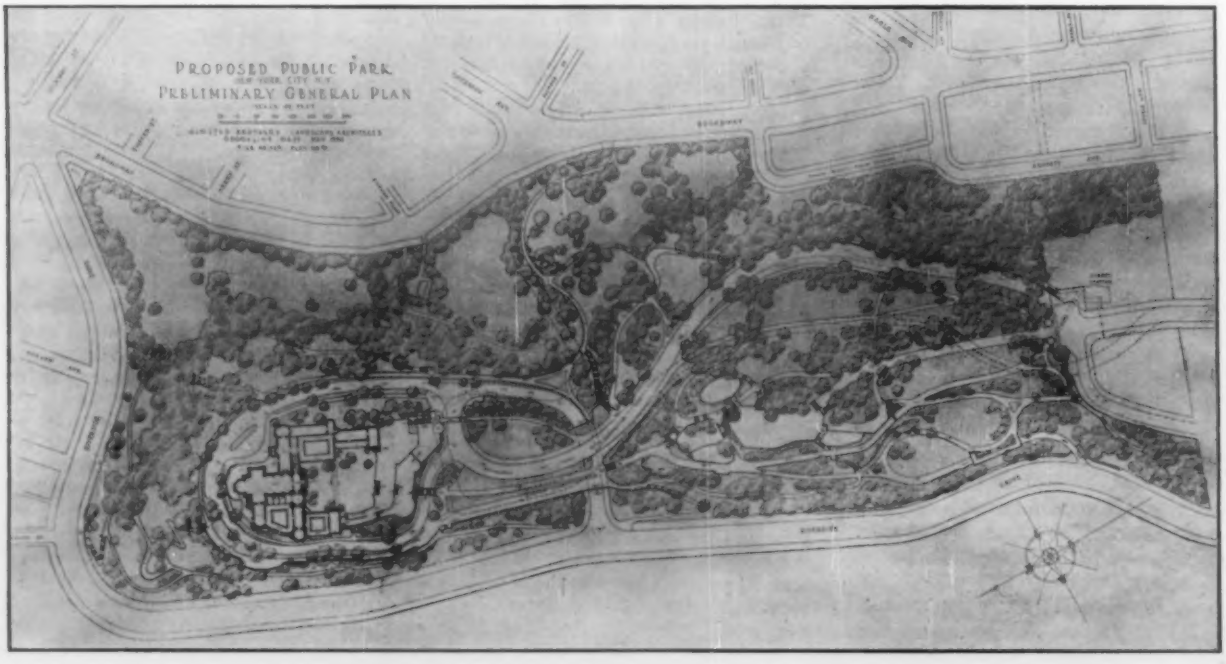
A BEAUTIFUL, partially wooded park of 56 acres in the northernmost section of Manhattan Island, New York City, a park which would have for the central motif of its architectural design a splendid Gothic Museum of Art surrounded by its own appropriately laid-out grounds—this is one of the ambitions of John D. Rockefeller, Jr., for his native city. He made it completely realizable in June when he placed before Mayor James J. Walker a practical and concrete proposal to give the tract of land and to finance its development according to an accompanying preliminary plan. Also accompanying the offer was a resolution already adopted by the Board of Trustees of the Metropolitan Museum of Art accepting Mr. Rockefeller's offer of the new building for its Gothic collections. Both the Mayor and the Board of Estimate and Apportionment have passed favorably upon the whole proposal. The necessary final steps leading to the city's definite official acceptance will not be taken for several months. No thought is entertained, however, of material obstacles arising, or of greatly delayed acceptance.

The value of the land, including landscaping, is estimated at $12,000,000. The new building and four-acre site for the Metropolitan Museum branch would cost somewhere between $3,000,000 and $4,000,000.

The general landscape plan for the park, as prepared by Olmsted Brothers, of Brookline, Mass., is reproduced below. The museum location, as indicated, is on an eminence overlooking surrounding areas. The Metropolitan Museum of Art some years ago took over The Cloisters, a medieval building brought from southern Europe by the sculptor, George Gray Barnard, and with it, Mr. Barnard's fine collection of Gothic art, which it housed. This is the only branch museum in the country. It is much too small to house advantageously the Museum's whole collection of Gothic art; and Mr. Rockefeller, who has a constant and thoughtful interest in the city's art treasures, has long cherished plans for more commodious quarters for this collection. Architectural drawings have been prepared for a structure which will provide such quarters. The architect's drawing of the main entrance, as reproduced at the top of this page, is sufficient to suggest that it is the donor's intention to provide a building conceived in a spirit completely appropriate to the age whose treasures it would house.

THE PROPOSED MUSEUM BUILDING

Mr. Rockefeller has long owned the proposed park land. Twice before, in former administrations, it has been offered to the city with provisions which the city did not find acceptable. Fort Tryon, of historic Revolutionary significance, is within the boundaries, and a proposal has been made to call the whole area Tryon Park.



Hamilton's New Plant Cuts Electric Costs in Half

By
JOHN E. NORTHWAY
SECRETARY-MANAGER,
CHAMBER OF COMMERCE,
HAMILTON, OHIO

FROM a condition of dependence upon purchased power for about two-thirds of the electrical energy distributed, the Hamilton municipal electric system has turned to generation of all of its power, with one of the best-equipped and most efficient municipal electric plants operating in the Mid-West. This has been accomplished under the leadership of City Manager R. P. Price.

Generated power formerly cost more per kilowatt - hour than purchased power; but for 1929, the first year of operation of the new plant, the cost was 0.65-cent per kwh. generated, whereas for the preceding year the cost of purchased power was 1.44 cents per kwh. Taking account of interest and other capital charges, the 1928 figure for total cost of power consumed, whether generated or purchased, was about 3½ cents per kwh., whereas in 1929 it was 2 cents.

Construction of the new plant began early in November of 1927. Actual operation was started on January 5, 1929, with two 3,000-kilowatt units. On November 15, 1929, a third unit was completed, of 7,500-kw. capacity. With this additional turbine a stand-by service formerly furnished by the Union Gas & Electric Co. was eliminated, a saving to the city of $36,000 a year. At the present time the capacity of the generating equipment installed is 13,500 kw., or 16,875 kilovolt-amperes at 80 per cent power factor. The total cost of the plant's erection, about $1,212,000, exclusive of real estate and interest during construction, is equivalent to a unit cost of $90 per kilowatt, or $72 per kva. This is a low cost compared to other plants of similar design.

The power-plant building is of strictly fireproof construction. The building frame is of structural steel, and the walls are of brick and steel sash. All doors and stairways are of metal construction. Ample light is provided by the steel sash and the copper and wire-glass skylights over the turbine and boiler rooms. Reinforced concrete slabs are used for the roof decks, with a layer of cork to prevent condensation. In the turbine room, a 25-ton motor-operated Niles overhead traveling crane is used for the handling of heavy equipment.

Boiler Equipment

Four 500-horsepower Stirling water-tube boilers are now installed, each of which is designated for 350 pounds steam pressure, and equipped with superheaters. To insure low maintenance costs and economical operation, the furnaces were constructed with liberal combustion space and are lined with steel mixture refractory blocks. Diamond soot blowers, of eight elements each, are provided for cleaning tubes. A brick chimney, 260 feet high, and 9 feet, 6 inches inside diameter at the top, has been constructed to provide overfire draft and deliver the burned gases at such a height as not to be objectionable to the neighborhood.

Coal is delivered to the plant in hopper-bottom cars on a siding of the B. & O. railroad. Coal-handling equipment was installed to handle the coal from the cars directly to the boilers, or to field storage. An overhead storage of 150 tons is provided in the boiler house, while 12,000 tons can be stored in the storage field. Coal is reclaimed from the field by a drag scraper system.

The boiler rooms are so constructed as to permit the installation of air preheaters with their fans for all four boilers. An addition to the boiler room to house four more boilers can be made at a comparatively low cost. Two 3,750-kva. and one 9,375-kva. Westinghouse turbo-generators are installed at the present time, each with direct-connected exciter. A spare steam turbine exciter set is provided for reserve.

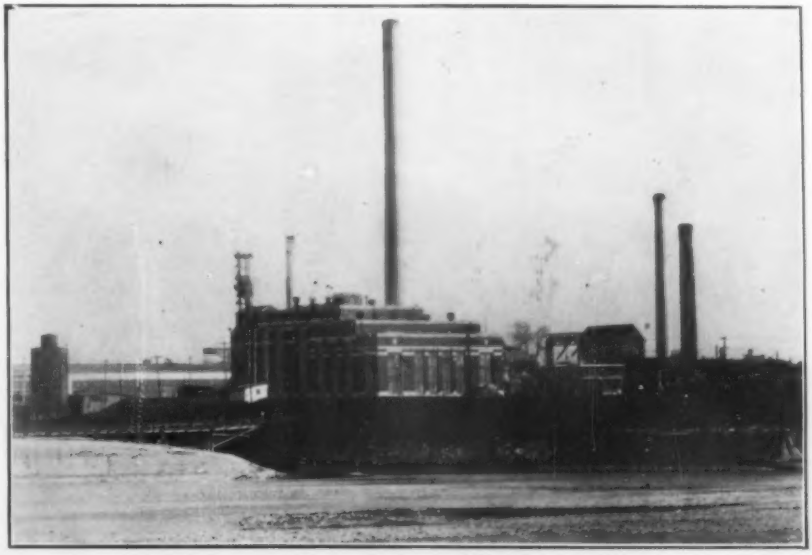
Cooling water for the surface condensers is obtained from the river. The water flows by gravity to the concrete intake well, from which it is pumped through the condensers to the discharge well. From the latter the water returns by gravity to the river at a point downstream from the intake. Two traveling water screens are installed for removing débris from the circulating water.

The circulating pumps are equipped with dual drive, a motor and a steam turbine. Two condensate pumps are provided for each condenser—one motor-driven and one steam-turbine-driven.

For the purpose of cooling the generators, a closed-circuit air-cooling system is employed, using a Griscom-Russell air cooler.

With the use of surface condensers, only a small amount of make-up water is required for boiler feeding. A high-pressure double-effect evaporator plant of Griscom-Russell make, with a high heat-level vapor condenser, has been installed to furnish sufficient distilled water for make-up purposes, insuring proper boiler water.

The regenerative cycle is used in heating the boiler feed water. The main steam turbines are bled at two points. The condensate is heated in the inter and after condensers of the air ejectors, in the low-pressure bleeder heaters, which take steam from the lower-pressure bleed points of the turbines, and in the Elliott de-aerating heater, which



THE NEW MUNICIPAL POWER-PLANT, HAMILTON, OHIO

takes steam from the higher-pressure bleed points of the turbines. After passing through the boiler feed pumps, the boiler feed-water is heated in the high heat-level vapor condenser of the evaporator system.

Three Cameron boiler feed pumps are provided—two motor-driven and one steam-driven. Duplicate feed-water lines are installed to insure a supply of water to the boilers at all times. Storage is provided for hot condensate, cold condensate and raw water.

Automatic control of combustion is accomplished with a Carrick control system. An S-C feed-water regulator system is installed for the control of boiler feed-water. The entire plant is equipped with the proper gages, meters and indicators, of Republic and Crosby make, to enable the operating personnel to keep accurate and complete records and to maintain efficiency.

Electrical Equipment

The turbo-generators are three-phase, 60-cycle, generating at 6,900 volts with grounded neutral. The connections from generators to busses consist of copper bar mounted on bus supports and installed in compartments.

The main switchgear consists of Westinghouse electrically operated oil circuit-breakers which, with their disconnecting switches, busses and connecnections, are mounted in a cell structure consisting of Zellite, which was erected by Deceleco, Inc. The oil circuit-breakers are mounted in the cell room of the switchboard bay at turbine floor level. The house-service switchgear consists of Westinghouse electrically operated, frame-mounted, oil circuit-breakers erected in the basement of the switchboard bay.

The circuit-breakers are controlled by a straight vertical-type switchboard on a gallery in the switchboard bay above the cell room, overlooking the turbine room. A storage battery has been installed for the operation of the oil circuit-breakers and for furnishing emergency lighting. The battery is charged by a small motor-generator set.

Space has been provided in the cell structures for future generators and future feeders. The cell room, cell structure, switchgear and control board have been so constructed and installed as to permit expansion to a full double bus, double breaker installation in the future.

All outgoing circuits leave the plant underground from a cable room located below the cell structure housing the main switchgear.

A galvanized steel outdoor transforming substation has been installed adjacent to the plant. For the present, this substation is being used solely as a step-down station, stepping the voltage down from 6,900 volts to 4,000 volts, and the energy is delivered underground to the old distributing board in the old generating station.

A galvanized steel outdoor transmade of the present and probable future electric load of the municipal plant, with the view of rebuilding and planning distribution system construction to meet these load requirements as and when they may develop.

Additions will be made to the present substation, where the 6,900-volt generating voltage will be stepped up to a higher voltage for transmission to outlying substations. Energy will be transmitted from these outlying substations at 4,000 volts. With the installation of the outlying substations, the old generating station will be used for the storage of supplies for the city gas,

COMPARATIVE OPERATION COST OF HAMILTON, OHIO, MUNICIPAL ELECTRIC PLANT FOR THE YEARS 1927–1928–1929

	1927	1928	1929	Cost per Kwh. Consumed 1927	1928	1929
Production cost	$196,746.44	$218,604.38	$148,571.15	$.01763	$.01693	$.00824
Distribution	60,055.12	70,803.91	67,917.43	.00538	.00548	.00376
General	23,450.02	32,216.48	33,646.04	.00210	.002495	.00186
Total operation	$280,251.58	$321,624.77	$250,134.62	$.02511	$.024905	$.01386
Interest cost	$ 39,907.50	$ 43,212.50	$ 33,417.49	$.003576	$.003346	$.00185
Sinking fund cost	67,958.73	60,776.62	50,134.80	.00609	.004706	.00277
Capital accounts	37,544.08	36,105.88	35,300.60	.00336	.00279	.00195
Total operation and overhead	$425,661.89	$461,719.77	$368,987.50	.038144	.035747	.020454
Gross revenue	$508,387.03	$567,993.83	$646,031.10	$.04555	$.04398	$.035812
Net earnings	$ 82,725.14	$106,280.06	$277,043.60	$.007406	$.008233	$.015358
Kwh. generated	4,402,475	4,465,275	18,561,000			
Kwh. purchased	8,350,340	9,845,290	1,418,880			
Total kwh.	12,752,815	14,310,555	19,979,880	Cost per kwh.		
Cost of energy purchased	$123,521.88	$141,804.75	$ 28,418.18	$.01479	$.014403	$.02002
Cost of energy generated	73,224.56	76,799.62	120,152.97	.01641	.01719	.00647
Total cost	$196,746.44	$218,604.38	$148,571.15	$.01542	$.01527	$.007436
Sold to consumers	9,672,107	11,071,046	14,696,960 kwh.			
Street lighting	1,487,000	1,306,313	1,512,010 kwh.			
Plant operation	.....	534,313	1,830,500 kwh.			
Total consumed	11,159,107	12,912,620	18,039,470 kwh.			
Total pur. and gen	12,752,815	14,310,555	19,979,880 kwh.			
Consumed	11,159,107	12,912,620	18,039,470 kwh.			
Line and transformer loss	1,593,708	1,391,935	1,940,410 kwh.			
Per cent lost	16.48%	9.76%	9.43%			

	1927	1928	1929
Operating expense—per cent of gross revenue	55.12%	56.62%	38.72%
Overhead expense—per cent of gross revenue	28.62%	24.66%	18.40%
Net earnings—per cent of gross revenue	16.26%	18.72%	42.88%
Efficiency in distribution system	83.52%	90.24%	90.57%
Kwh. consumption per capita, per year	214	248	347
Gross revenue per capita	$9.77	$10.92	$12.42
Net earnings per capita	1.57	2.04	5.32

The above per capita figures are based on the city of Hamilton having 52,000 population.

FIRING GALLERY OF THE HAMILTON POWER-PLANT
Battery of four 50-hp. Stirling boilers equipped with Taylor underfeed stokers

water and electric properties.

A portion of the old power-plant has been converted into a city garage for the housing and repairing of all city motor equipment.

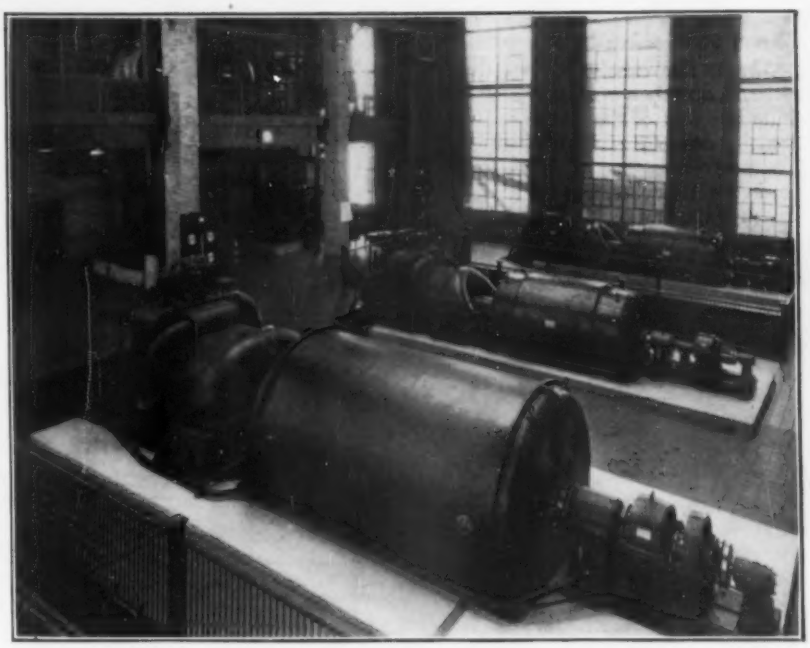
The addition of another bay in the turbine room will allow for the installation of a fourth turbine. The condenser-water intake has been designed and built for four turbines. The coal-handling equipment is designed to handle coal for a second row of four boilers.

In the building of this plant, The Froehlich & Emery Engineering Co., of Toledo, Ohio, were employed as engineers, having complete charge of the design and construction of all of the work, and have been employed as engineers in the rebuilding of the distribution system.

Striking Changes in Costs, Consumption and Revenues

Comparison of operating costs during the years 1927, 1928 and 1929, as shown in the accompanying table, present an interesting testimonial to the efficiency of the municipal plant.

Net earnings in 1927 were $82,725; in 1928, $106,280; and in 1929, with the new plant in operation, they were $277,043. In 1927 a total of 9,672,107 kwh. were sold to consumers. This figure was boosted to 11,071,046 in 1928, and in 1929 it rose to 14,696,960 kwh., a leap in consumption in the two years of more than 5,000,000 kwh.



MAIN TURBINE ROOM, SHOWING TWO 3,000- AND ONE 7,500-KW. WESTINGHOUSE TURBO-GENERATORS

Adjustment of rate schedules and the adding of more industrial consumers have reduced the average revenue per kwh. consumed from 4.4 cents in 1928 to 3.6 cents in 1929. The present rate schedule graduates from 6½ cents per kwh. down to one cent. Rates could be lowered further, but the consumers seem satisfied for the city to obtain a substantial surplus to invest in improvements.

Control of Air Pollution in the City of Akron

A Valuable Record of Experience and a New Ordinance

By R. C. DEMARY

CHIEF INSPECTOR, BUILDING DEPARTMENT, AKRON, OHIO

ASIDE from the effect of polluted air on health, the economic waste through smoke is great. Air filled with soot and ash adds to the expense of every individual, through increased laundry and cleaning bills. Decreasing the light penetration from the sun makes artificial lighting bills much higher. Discoloring and injury of buildings places financial burden on building owners, and, finally, smoke means wasted fuel, and fuel is one thing that we need to conserve.

In the city of Akron, after a careful survey, the loss due to smoke and soot was placed at $3,542,000 in 1923. Through the efforts of the Smoke Abatement Department this has been gradually decreased, until in 1929 it was placed at $2,277,000, which means a saving in six years of $1,265,000. This saving was made at a cost to the taxpayers of $15,000, and under adverse conditions, for at no time did the Department have the support of the people.

As little more could be done under the existing ordinance, and as the Department of Law had declared the determining of the density of smoke by means of the Ringelmann Chart illegal because it did not set up a specific standard of measurement, the Department of Smoke Abatement undertook to draft an entire new ordinance. Expert engineers were called in and information was sought from 29 cities active in smoke abatement work. As a result, a new ordinance was drafted, presented to Council and passed on May 6, 1930. It is known as the Heating and Fuel Burning Equipment Ordinance, instead of the Smoke Ordinance. The Smoke Department is abolished as well as the term "Smoke Inspector," which is a misnomer and should be done away with in all cases. A new department has been created which will operate under the Safety Department and in connection with the Department of Building Inspection and will be known as the Department of Heating and Fuel Burning Equipment.

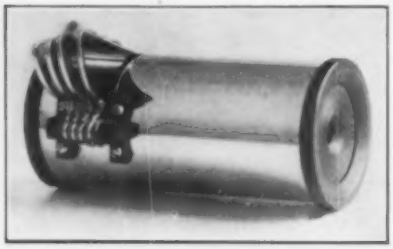
The new ordinance has been declared a model by those who have had an opportunity to analyze its provisions. The old one was simply a smoke prevention ordinance and, while it provided a penalty clause, the Inspector's hands were tied because one section read: "Upon finding a violation, it shall be the duty of the Smoke Inspector to report same to the Department of Law." No provision was made for going further than making the report. Realizing this, the Department carried on its work along educational lines with marked success, until the time came when more drastic action was necessary.

Teaching Smoke Elimination

In carrying on the educational work, the inspectors would go into a boiler-room and give the man in charge proper instructions in the firing of his boilers. The inspectors would fire them and use every effort to show the fireman that smoke could be eliminated and with less work on his part. There were, however, a number of cases where smokeless operation was impossible because of the

equipment and on account of the arbitrary stand taken by the owners.

Akron, like nearly all Mid-Western cities, is strictly a warm-air heated city. Fifty per cent of the smoke and soot in the city comes from the private homes. To overcome this, several thousand cards, 8 x 10 inches, were printed, showing by illustration and wording the proper way to fire a hot-air furnace so as to eliminate smoke and save fuel. These cards were given to the children at the schools, with instructions to take them home and use every effort to see



THE UMBRASCOPE, OR STANDARD SMOKE TESTER, USED IN AKRON, OHIO

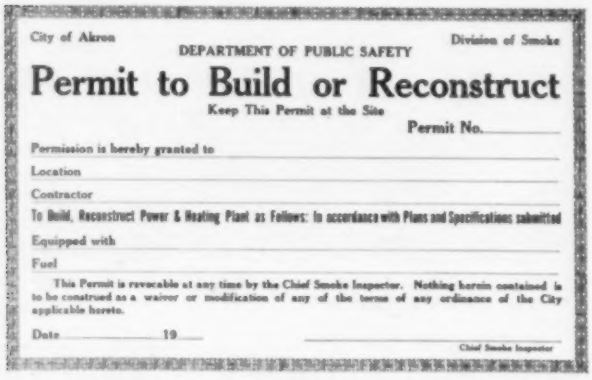
The glasses are tested photometrically; they transmit 40 per cent light and absorb 60 per cent of the entering light

check on the installation.

Two minutes of smoke only will be allowed in one fifteen-minute period, and six minutes will be allowed in any one hour of the twenty-four for the purpose of building new fires or cleaning old ones. It was thought by some that this was rather drastic, but it has been demonstrated that it can be done and that it is being done in several cities.

The ordinance also gives the Chief Inspector and his deputies police power to enforce the ordinance.

The city is divided into eight districts,



City of Akron — Division of Smoke

DEPARTMENT OF PUBLIC SAFETY

Permit to Build or Reconstruct

Keep This Permit at the Site

Permit No.

Permission is hereby granted to

Location

Contractor

To Build, Reconstruct Power & Heating Plant as Follows: In accordance with Plans and Specifications submitted

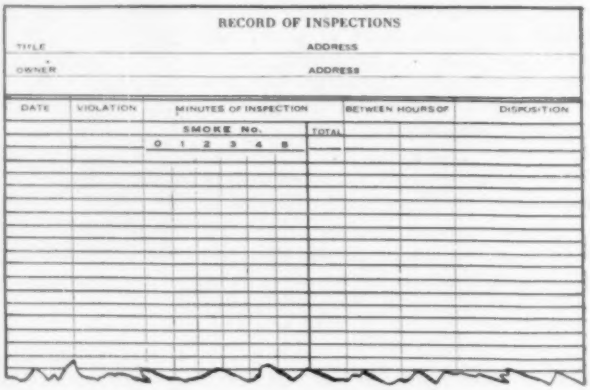
Equipped with

Fuel

This Permit is revocable at any time by the Chief Smoke Inspector. Nothing herein contained is to be construed as a waiver or modification of any of the terms of any ordinance of the City applicable hereto.

Date 19

Chief Smoke Inspector



RECORD OF INSPECTIONS

TITLE ADDRESS

OWNER ADDRESS

DATE	VIOLATION	MINUTES OF INSPECTION — SMOKE No. 0 1 2 3 4 5	TOTAL	BETWEEN HOURS OF	DISPOSITION

PERMIT AND INSPECTION FORMS

that the instructions on the card were followed out. Reports from those who followed the instructions show a fuel saving of from 10 to 15 per cent, and the system of card distribution was a great success. It is the intention of the Department in conjunction with the School Board to have more cards printed and distributed at the opening of the fall term. In addition, there will be prizes of five- and ten-dollar gold pieces to the scholars that carried out the firing instructions and write the best reports on the results obtained.

The density of smoke in the city of Akron is now determined by a smoke tester which provides a standard of measurement. It resembles a telescope, and has a means whereby smoked glass discs may be inserted to cover a part of the lens, thus determining by the number on the disc the density of the smoke with which the disc blends. Smoke of a greater density than that which will shut off 60 per cent of a flame having a lighting power of 16 candles will be a violation.

As a means of securing further evidence to produce in court if necessary, a motion picture camera is used. This camera is a standard make, but has a device developed by the Department which makes it automatic. When the camera is set up, by pressing a button a series of pictures may be taken over any specified time from 5 to 60 seconds. A record of the timing is registered by a stop watch. With this there is no question as to the length of time a chimney was smoking or the time of day.

No fuel-burning equipment of any kind which may cause smoke or the emission of soot, ash or noxious fumes can be installed without first meeting the approval of the Department and receiving a permit. A final inspection must be made before a permit will be issued for the use of the equipment. This is a check on the installation and at some central point in each district a hard-rubber jar four inches square is set up on some roof. This jar contains a mixture of water and glycerine to a depth of about one inch. Once each month these jars are collected, and new ones set out. The liquid is evaporated and the solid contents weighed and analyzed. By this means the air pollution is determined and just what this pollution consists of.

The time has come when every American city working under an out-of-date smoke abatement ordinance, as most of them now are, will have to draft new ones which cover not only the emission of smoke, but the pollution of the air as well.

In every American city there are ordinances regulating the sale of foodstuffs so that the people are assured of clean, wholesome food. It is just as necessary that we have clean air to breathe as clean food to eat or clean water to drink.

"Uglification"

"THERE are cities in which the widening of streets is accompanied by the tearing-down of many fine trees without first a well-designed plan and adequate appropriations for planting as fully as the art of tree planting permits. It is to be suspected that in many cases no thought is given the matter at all by the authorities. The pressure is for street widening and not for street planting, and city officials do what they have to do.

"Yet cities without trees are tawdry, ugly, and, indeed, repulsive. The human face would not be the same without skin. Nor are rural highways any better off without the border of trees. To cut these down in the widening and straightening process and replace them with billboards is the last word in human futility.

"It is the sober truth that street and highway improvement which uglifies will do more harm than good."

These paragraphs are from an editorial in *The Saturday Evening Post*. That is significant. It means that a strong, public-opinion-forming periodical has taken up and transmitted to its millions of readers the plea for sparing the roadsides that regional planners, landscape architects, the United States Bureau of Public Roads, and other individuals and organizations have been urging as public policy for some time. Public opinion is notably a powerful former of public policy. This movement means roadside beauty.

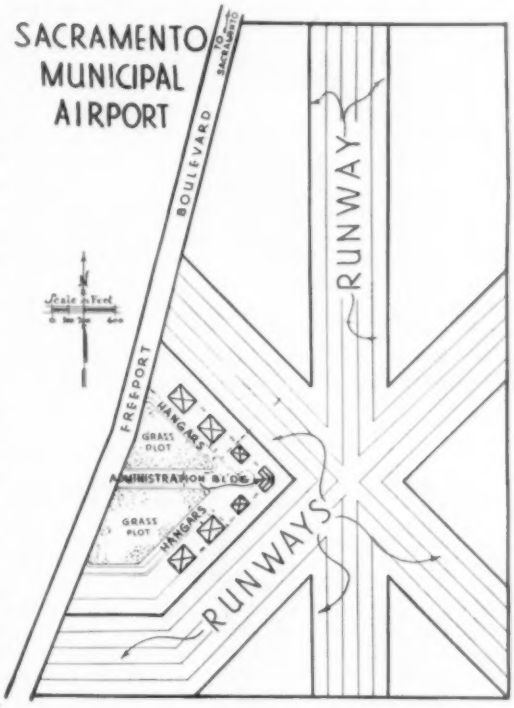
Selecting, Planning and Financing Sacramento's Municipal Airport

By RALPH PAUL DILLON

SACRAMENTO'S new municipal airport was dedicated in a two-day ceremony, April 12 and 13, with one of the most impressive aerial shows ever staged on the Pacific coast. More than 200 planes took part, including the entire Provisional Wing of the Army Air Corps, approximately 150 ships. The latter recently completed three weeks of annual maneuvers at Mather Field, Sacramento. It is estimated that at least 50,000 persons visited the municipal field during the two days.

The new airport is on Freeport Boulevard, less than five miles from the central Post Office. It covers 232.5 acres, and when the ten-year program of development is completed, it will have an A-1-A Department of Commerce rating and should be second to none as a municipal aviation center. The cost will be $394,000, and at the end of ten years every foot of land and piece of material will belong to the city of Sacramento without a bond or other debt outstanding. Nine prominent citizens, serving without pay, made up the commission which worked out the airport plan. They were selected by the City Council, and after a year of intensive study, presented a report and recommendation for selection of an airport site that should remain as a model for the solution of similar problems in other communities.

The cost of the land was $80,000, and under the terms of sale it will be paid for in $10,000 installments beginning in 1931, plus interest on deferred payments, at 6 per cent. The entire budget of expenses for the ten-year construction program, as accepted by the city council is shown in the table below. On June 10, 1930, however, the citizens voted a $150,000 bond issue to provide for immediate erection and completion of hangars, runways and illuminating facilities, thereby advancing the program of work five years. The original plan provided for an investment of $30,000 a year paid for by direct taxation.



An idea of the scale of operations expected at the airport may be gained from the fact that the main north-south runway is 4,000 feet long, and conforms to the prevailing winds. The transverse runways are 3,000 feet each, and all are 500 feet wide.

Present plans call for the construction of four major hangars of concrete and steel, 120 by 150 feet, and two smaller ones, 80 by 120 feet. These are to be arranged in the right-angle form, as shown in the accompanying map (above) of the only airport in the country having its hangars practically in the center of the landing area. An L-shaped administration building will occupy the point of the angle.

The entire airport covers 10,128,000 square feet, of which approximately three million square feet will be devoted to landing strips, and more than one million to paved runways. Hangar space will occupy 16,000 square feet, and parking area 400,000.

The placing of the hangars at the center of the field instead of at the side gives a minimum of taxiing distance to and from all runways, and at the same time allows a full view of operations from the highway—an excellent advertising feature.

Construction of the runways and the plan of drainage is novel, at least to the Pacific coast. Each runway has been crowned, after the manner of a dirt highway, with drainage ditches on each side leading off the field. From the peculiar topography, only a 6-inch cut was necessary to make the field level, with no fills, yet the highest point on the landing area is at the converging point of all runways. After twelve hours of steady rain, the field has been found in such condition that planes may land in perfect safety. No sub-surface drainage will be used.

It is of interest that the advertisement for proposals of sites for the airport brought eighteen responses, each of which, if accepted, was a legal option on the property for purchase at the owner's price. Six were eliminated at once or for obvious results. The remaining twelve were submitted to rigid examination from the angle of location, topography, air currents, weather conditions and price. A schedule of rating was prepared with thirteen items, each of which was given a figure representing its value in a perfect field with a total of 100 per cent. For example, "freedom from dense fog" was given a rating of 15, while "distance from the post office" received

TABLE SHOWING ORIGINAL ALLOCATION OF EXPENDITURES

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	Sub-Totals
Land (principal)	.....	.....	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$80,000
Interest	.....	.....	2,400	2,400	2,400	2,400	2,400	2,040	2,400	.....	16,800
Taxes	$ 750	$ 750	750	750	750	750	750	750	750	750	7,500
Grading	500	500	500	500	500	500	500	500	500	500	5,000
Drainage	1,000	15,000	.....	5,000	.....	15,000	4,000	5,000	5,000	.....	50,000
Landing strips	4,000	2,500	10,000	.....	15,000	.....	20,000	17,500	17,500	13,500	100,000
Runways	.....	.....	7,500	.....	5,000	5,000	2,500	2,500	2,500	.....	25,000
Taxiway and aprons	.....	.....	.....	3,000	.....	2,000	.....	5,000	5,000	.....	15,000
Hangars	4,800	4,800	2,000	20,000	.....	5,600	.....	.....	5,000	20,000	61,000
Administration building	.....	5,000	.....	.....	5,000	.....	.....	.....	.....	.....	10,000
Lighting	.....	1,000	.....	2,000	.....	.....	.....	2,000	.....	.....	5,000
Roads and parking	.....	.....	2,000	.....	.....	.....	1,000	.....	1,000	1,000	5,000
Water and sewer	750	.....	1,000	.....	.....	1,000	.....	.....	.....	2,250	5,000
Miscellaneous	.....	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	9,000
Total	$11,800	$30,550	$37,150	$44,650	$39,650	$42,650	$42,150	$46,650	$50,650	$49,000	$394,900

NOTE.—By agreement, the 6 per cent interest on the $80,000 payment for the land has been averaged at $2,400 per annum, instead of graduated payments starting with $4,800 for the first year and ending with $600.

10. Site No. 17, which was finally selected, rated as follows:

	Relative Value	*Site Value*
Freedom from dense fog	15	12.3
Freedom from bad air currents	10	8.0
Area of field	10	9.2
Configuration of field	5	5.0
Approaches, satisfactory areas under take-off	8	8.0
Favorable prevailing winds relative to runways	5	3.0
Prospective neighborhood development	4	3.0
Possibility of expansion	4	4.0
Location relative to axis of air travel	10	6.0
Distance from post office	10	5.0
Distance from population center	10	6.3
Distance from railroad	4	2.0
Distance from air plane factory sites	5	2.0
Total	100	73.8

If site No. 17 were developed to the last detail, it would cost approximately $650,679, or a cost per unit of rating of $8,816. This was second lowest in the list of twelve possible sites.

Weather conditions played an important part in the choice of the site. In studying the various properties, instruments were installed at all twelve sites, to determine exactly the average wind velocity, prevailing winds, and moisture. At site No. 17 an almost ideal condition was found, as will be seen from the rating chart. The local meteorological bureau furnished data on wind directions and speeds, average temperatures, and similar information covering the last thirty years, so that in selecting the site the commission was not guided by guesswork but by actual facts.

Plans are now under way for the creation of an interim zoning ordinance which will regulate future building operations in the vicinity of the airport. Residences will be permitted, but tall buildings, or shacks and hot-dog stands which would mar the general plan of landscaping will be prohibited. It is hoped that a regional planning commission can be organized, with the cooperation of the county, for enforcing such an ordinance. The area around the airport is at present devoted to light agriculture, with few trees and no power lines of importance. In the next five years, according to the city planners, this will be almost entirely residential, since it is less than a mile from one of Sacramento's most beautiful parks, and the same distance from the new high school.

With the Sacramento municipal airport only a little more than a year old, and only recently opened to traffic, three schools have applied for space and use of the field, five gasoline companies have erected stations there, and the Boeing System, now located at Mather field, 14 miles from Sacramento, is planning to make the new port its air mail base, with a regular schedule of passenger service.

Protecting Wisconsin Waterfront Dwellers

TO protect the health of hundreds of thousands of its citizens, and to preserve the beauty of its heritage, the state of Wisconsin requires that before a plat which borders on any one of the 7,500 rivers and streams on the 388 miles of Lake Michigan shore or on the 150-mile shore line of Lake Superior may be officially recorded with the local county register of deeds, it must be certified by the State Board of Health.

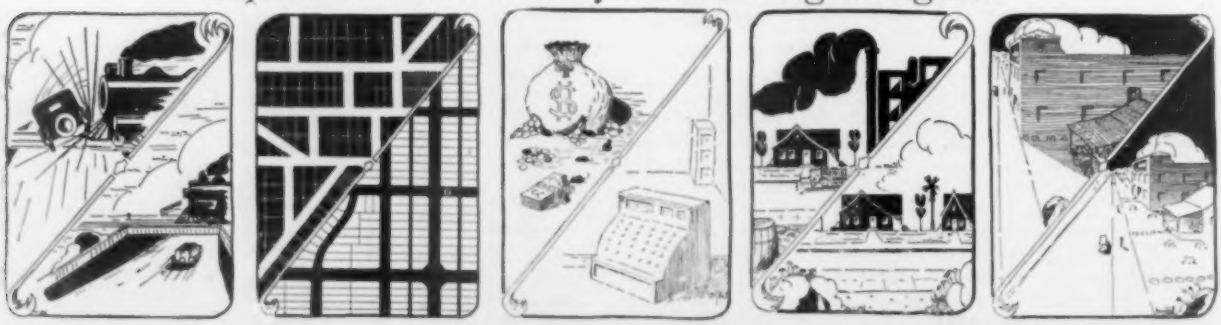
Laws passed in 1927 and 1929 provide the basis for the prevention of pollution of these lakes and streams, and the correction of the pollution already existing, C. A. Harper, M.D., Health Officer of Wisconsin, explains in a recent issue of the *United States Daily*. The Board of Health is authorized by the Legislature to make reasonable rules and regulations. These have been made, and the Board believes that a safe water-supply and ways and means of proper disposal of waste have become part of the program. They are given the first consideration before a plat can be recorded and marketed.

"Building restrictions on shore line, rear and side lines are a part of the requirements," writes Dr. Harper. "Adequate road and streets must be provided by the surveyor. Lots of 50 by 125 feet constitute the minimum size. Such lots give reasonable light and ventilation to the dwellers. Bathing beaches are safeguarded, and as far as possible pollution of the bordering waters is prohibited." Prior to 1927 there had been little regulation from a sanitary and health standpoint, and plats were developed containing at times several thousand lots, 20 by 100 feet, bordering on or adjacent to a small pond. No provision was made for safe water, for sewerage or proper household waste disposal.

The proper and safe disposal of waste water constitutes one of the outstanding problems under the stream pollution control activities. Municipalities are called upon to install and operate sewage treatment plants and to regulate the disposal of objectionable industrial waste not only for the convenience and safety of their inhabitants, but for the protection of the lakes and streams. The paper and pulp mills and the Wisconsin Canners' Association have adopted a cooperative program to develop and install waste treatment devices to prevent objectionable stream pollution, and it is planned to extend the cooperative policy to include milk products industries. Definite research is being conducted for the development of more satisfactory methods of creamery waste disposal.

As an educational and control measure, a systematic pollution survey of streams is also being made. Probably one-third of the state's area—the southeastern portion—Dr. Harper estimates, contains two-thirds of the potential source of stream pollution. Most of the rivers are more or less seriously polluted, especially in the vicinity of cities and in largely industrialized areas. Many lakes and small streams, however, have suffered but little from serious pollution, and it is believed that now that initial machinery has been developed, it will be possible, with the cooperation of the municipalities, industries and citizens generally, to carry out a corrective and preventive program.

Episodes from a City's Planning Progress



These "Befores" and "Afters" represent activities in grade-crossing elimination; subdivision platting; a budgeted spending program; zoning; and uniform setback lines. They are a few of a sizable number of smartly turned-out chapter-head decorations from the Annual Report of the City Planning Commission of Los Angeles, Calif. Each chapter recounts outstanding progress

Modern Motor Arteries

Superiority of Parkways to Boulevards or Super-Highways for Interurban Travel

By GILMORE D. CLARKE
LANDSCAPE ARCHITECT,
WESTCHESTER COUNTY PARK COMMISSION;
FELLOW, AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

WE are now able to travel from place to place overland by air, but for many years to come most of us will be satisfied to remain on the ground, using rail and highway. The necessity for uninterrupted train service was acknowledged many years ago, and the railroads planned and developed great systems so that one may travel hundreds of miles, stopping only to change train crews and to replenish water and fuel. The railroads have long since realized the necessity for eliminating crossings at grade of other lines and also of highways.

Now we demand, or should demand, uninterrupted motor service. When we start out via motor from New York to Chicago, we must pass through many cities and villages, and in most of them through the congested business sections, since these busy streets are often the only ones which provide a direct way through. Until now, it has been impossible to convince many townspeople that by-pass routes to avoid the congested areas are desirable. They believe that business is being taken away from them when the traffic moves somewhere else; they have not yet realized that this through traffic is a distinct liability.

It is still the policy of many states and county highway authorities to improve existing roads throughout their entire length, rather than to provide new rights-of-way to avoid congested sections. Millions are being expended annually to widen old rights-of-way in sections where it is necessary to purchase improved properties, often requiring the expenditure of more for land in one block to widen a street than a mile or more would cost for land for a by-pass route. The latter, in addition to being cheaper, is much better able to accommodate through or arterial traffic.

Many will consider that the discussion of by-pass highways is an elementary one—a discussion of facts which appear much too obvious. However, there still remain to be considered the details of the development. How are we to treat the by-pass route? Is it to be just an ordinary highway? If so, its value to serve the purpose it was intended to serve will be temporary and short-lived. "Ribbon development" follows the borders of all of our arterial roads as they are today, spoiling the countryside, lowering land values, providing uneconomical locations for business and unpleasant places to live in, and resulting in retarded traffic flow on the very roads built for fast or uninterrupted through traffic. Engineers are beginning to realize not only the importance of by-pass development but of the construction of these new roads on rights-of-way sufficiently wide to prevent direct frontage upon the highway; and that they must be built far enough from urban development to eliminate the necessity of crossing a large number of other highways and local streets. Important arteries which must be crossed may be bridged, and access drives between highways provided, to make travel safe by eliminating left-hand turns on one or both intersecting roads.

State and National Parkways Recommended

In his paper delivered before the National Conference on City Planning, in Denver, June 23-25, and here presented in condensed form, the author included a proposal that the Conference adopt recommendations for the development of state and national systems of parkways connecting cities, state parks and forests, and national parks and forests.

He urges that "if the highway is to keep pace with the development of the motor vehicle, then it must be planned not only to be fully efficient but to be esthetically pleasing as well, utilizing the experience of engineers and landscape architects in collaboration;" and says:

"If we do not visualize the development in motor transportation the future is to bring, then we shall make it more difficult for the next generation to keep pace with its time."

"Freeways" and "Parkways" Defined

These new highways may be called "parkways," or they may be called "freeways," depending upon the manner of their development. Edward M. Bassett has coined the word "freeway," and it is distinctly applicable to a certain type of highway. He defines it* as follows: "A freeway is a strip of public land, dedicated to movement, over which the abutting owners have no right of light, air, or access."

The term "parkway" has been applied to several different types of driveway, but I think that now we can cause the name to be applicable to just one type of drive, which Mr. Bassett describes as follows: "A parkway is a strip of public land, dedicated to recreation, over which the abutting owners have no right of light, air, or access." He defines it in more detail as follows:

"A parkway allows a freer flow of traffic, because side streets and private driveways cannot enter it, and gasoline stations, garages and stores cannot front upon it. The abutting property owner has no right of light, air, and access over the parkway. To make this clear, one should think of the parkway as an elongated park. It is well known that the authorities can erect a fence or wall around a park, leaving appropriate *public* entrances. A parkway, however, is not for general use. As it is an elongated park, it must be used for recreational purposes, and consequently traffic is limited to pleasure vehicles."

The first, and one of the most successful of these "parkways," is the fifteen-mile Bronx River Parkway in Westchester County, New York. Its success has caused the people of the county to appropriate $60,000,000 since 1924 for purchase of over 17,000 acres of land and the development of additional parkways, together with other park and forest areas. This program of park and parkway development has demonstrated that a well-conceived plan for a county or a region can be built up on a sound economic basis, and it is providing a pattern and an added incentive for public bodies elsewhere to follow.

Are These Types of Highway Desirable?

Philadelphia has developed Roosevelt Boulevard, northward from the city. E. W. James, United States Bureau of Public Roads, says:

"This boulevard clearly indicates what should be avoided in parkway design. To the city line the parkway consists of two 20-foot or two 30-foot pavements with a separating parked strip of approximately uniform cross-section throughout. At the

* In THE AMERICAN CITY for February, 1930, page 95.

present time traffic uses the east-side pavement only for a considerable distance because of the bad condition of the west side. With the exception of a few important railroad grade-crossing eliminations, the entire boulevard is at the same grade as the streets of the subdivisions rapidly opening to the north of Broad Street, and the continued interruption to traffic promised by this design will in a few years ruin the parkway as an arterial route. It will become an elaborate city street and nothing more."

Detroit is the leader in the development of "super-highways." These are a good deal like the Roosevelt Boulevard in Philadelphia, since the rather elaborate grade separations planned have not yet been built. The right-of-way is 204 feet wide, with three separate widths of pavement, and sometimes in addition an electric train line. The city is cut up into pie-shaped areas which lack intimate contact with one another by reason of the difficulty of crossing the super-highway. Further than that, the development along these super-highways is ribbon-like. These border roads are not conducive to the best type of development for either business or residential use. The construction of the super-highway type of grade separation structure is expensive, more particularly in flat areas, and does not lend itself well to artistic treatment. In the vicinity of each, the area is likely to become "blighted."

And so I am forced to condemn the super-highway, as we know it, and prefer to recommend that our arterial highways, extending out from the cities to tap suburban areas, be constructed in rights-of-way wide enough to contain the pavements, leaving marginal strips on each side wide enough to provide planting. The planting may take the form of formal rows of trees or may be treated informally, depending upon the topography and the alignment of the road. Planting which will adequately screen the road from the view of abutting property and serve also to keep the noise of the traffic contained within the right-of-way area is desirable.

What is the result of the use of such planning? Ribbon development is made impossible along these arteries, and there is a tendency toward keeping the business from sticking out like knife-points into the country, thus destroying large areas for residential use. It leaves the entire road for uninterrupted through traffic. It makes it easier to plan grade separation structures, and, most important of all, provides a pleasant way to drive in and out of our cities to reach the suburbs and the country.

The lands for such a highway can be purchased with restrictive clauses against the erection of signboards within an area of 200 feet from the edge of the right-of-way. (Such a clause is included in all contracts for the purchase of lands for parkways in the Westchester County Parkway System, where the owner retains a residue.) With this type of development, land values will probably be higher than along highways where direct frontage is permitted and which sooner or later are responsible for the development of blighted areas.

Assessment Principles for Street Widening

By L. W. HOELSCHER
RESIDENT ENGINEER FOR BARTHOLOMEW AND ASSOCIATES, FORT WORTH, TEXAS

THE basic principle for the distribution of assessments is fixed and determined by the fundamentals of the principle of special benefit. The assessments should be levied against such property as may be benefited and in proportion to the benefit. And in no case should the assessment exceed the benefit.

Agencies for Levying Assessments

In smaller cities, a condemnation commission working with an agent of the city is probably as satisfactory a method as can be evolved. It has the advantage of the use of expert real estate knowledge; and if different men be used on the various projects, it will serve as a means of educating the real estate fraternity in the processes of special assessment. This in itself is of great value to the city, as it creates a more favorable attitude toward such assessments. Large cities carrying on a continuous program of widening may and do establish permanent bureaus to determine assessments.

Determination of the Assessment Areas

The first step in the levying of special assessments is the determination of the area benefited. An attempt to determine the area by any other rule than that of basic benefit will be false. There are definite elements of value which may be affected by a street opening and widening. These include utility, accessibility and salability—which latter is partially influenced by increased demand and partially by the psychology of the buyer who is naturally drawn to new developments. This last element is largely the one which induces the owner to pay his assessment with good grace. The assessment area must therefore be determined by the consideration of the property in the vicinity. The limits are often determined by parallel or competing influences.

SPECIAL ASSESSMENT DISTRICTS, SOUTH MAIN AND HENDERSON STREET WIDENING, FORT WORTH, TEXAS

The assessment district for the opening and widening of Henderson Street in Fort Worth will serve as an example. At the north end of the project, the area extends 450 feet west and 850 feet east of the improvement. The thoroughfare will extend north and south through the western edge of the greater major business district. Therefore, the principal benefit beyond the improvement will be along those streets leading from the business district to Henderson Street. North of Fifth Street, the district assessed is isolated and has been depreciating for a number of years. The area west of the thoroughfare will therefore be made more accessible and will also acquire increased reflected or neighborhood value. South of Fifth Street the area to the west of Henderson Street will take on very little special value as a result of the widening. Along the south part of the improvement the district is restricted to the frontage proper, except on Pennsylvania Avenue, a wide distributor street, where the district extends principally to the west. A peculiarity in this assessment district is that it skips about 700 feet along Fifth Avenue and Henderson Streets and picks up the corners of Magnolia—a business street. The frontage between is residential in character and therefore less likely to benefit by increased traffic. The corners of Magnolia derive value from both streets and will undoubtedly be more prominent and more valuable.

Special Assessments

In order to logically determine benefits, it is necessary to arrive at, first, the normal fair value of each piece of property before improvement, and, second, the probable fair value of the property after the widening. The probable increase in value due to the improvement is determined for each piece of land in the proposed assessment area. The total of all the individual benefits is the estimated total benefit of the project. The determination of assessments is therefore merely a matter of proportioning total assessments to total benefits. In the case of Henderson Street, this was about 1 to 5. In other words, each assessment is about one-fifth of the estimated benefit.

Special Problems of Procedure

The variation in benefits is difficult to determine. Where property is of fairly uniform value, the variation in benefit seems to be according to a square root curve, varying inversely with the distance from the improvement. But where there is great difference in the value of the property, this rule will not hold. For example, in the assessment district for the south Main Street widening in Fort Worth, property on the street 100 feet north of the widened section was assessed approximately $5 per front foot, and property 1,300 feet north of the widened section was assessed approximately $2.50 per front foot; while property 3,000 feet north of the widening was assessed approximately $5 per front foot, or practically the same as the property only 100 feet from the widening. The property 3,000 feet distant was of a much higher value and while it was deemed to have been benefited but 4 per cent of its previous value, whereas the property 100 feet distant was adjudged to have been benefited 75 per cent of its original value, the results were nearly equal. Apparently, the only general rule is that the assessments should be proportional to the benefits.

There is no doubt that the assessments should be varied with the depth according to some recognized depth scale. According to the Cleveland scale, a lot 150 feet deep would be assessed 1.15 times as much as a lot 100 feet deep. It is doubtful if any satisfactory rule can be evolved to deal with corners. In each case the matter of enhanced value must be determined.

Overlapping Assessments

The matter of actual or probable overlapping of special assessments is one of serious difficulty. It is impossible to prevent such overlapping in some cases, but in many cases it is possible to so determine the district as to obviate this evil. If this can reasonably be done, it will save much trouble and ill-will. If not, the second or possible third assessment should be tempered to the shorn lamb. The desirability of separate assessments for right-of-way and for paving is debatable. The procedure is of course fixed by the laws of the state, but there is no doubt that the logical plan would be to combine the costs and assess once for the total improvement.

It would seem unjust to assess any piece of property 100 per cent of the estimated benefits. In the first place, the property owner is entitled to some profit on the transaction, and in the second place the benefits are estimates at best and may not be realized for years.

Leases

Another moot question is the equity in assessing the property under lease. Of course, the answer is that there should be either a clause in the lease permitting an increase consistent with the assessment, or provision in the law to permit the assessment of leases. It has been the practice in Fort Worth to make assessments without regard to leases. While this works undue hardship on owners of land under long lease, it is all that seems possible under existing laws. Undoubtedly, a revision in the law should be made to divide the assessment equitably.

—Abridged from a paper read at the National Conference on City Planning at Denver, June 23, 1930.

Land Overcrowding by "Inching Up"

LAND overcrowding, the fundamental housing evil, usually is a result of "inching up"—a little more here—a little more there. That is how the old European cities became so crowded. That is why, today, cities with thought for the future find it necessary to have housing laws and zoning regulations setting definite standards for lot occupancy, says the Pittsburgh Housing Association, which reports a present-day inching-up tendency in Pittsburgh, especially in multi-family dwellings.

The effects of such invasion are minimized while the buildings are new, but in a pamphlet, "Inching Up: The Tale of a Tenement," the Association presents the case history with floor plans "before" and "after" of one Hill District house, fifteen or twenty years old, which "today we know should never have been built."

It is a house built for two families. When first inspected by the Pittsburgh Housing Association, it was occupied by one family of five, one family of four, two families of three each, and two lodgers. It is now occupied by four families, plus lodgers. At first, all rooms had windows on the outer air, but the air belonged to neighboring owners. Since then, neighbors have built on both sides, taking away part of the borrowed light and air, so that one room gets its only light and air by way of the kitchen and a hall, two others by way of a four-foot shaft. At first, there was a back porch on which opened the windows of the bathrooms and windows of two bedrooms. Then the owner enclosed the porch and made of it two combination kitchen-dining-rooms. Now the bathrooms get their only light and air through the kitchens, whose air they pollute.

Because this house overcrowds its lot, it has dark, airless rooms. Because it has dark, airless rooms it is an unfit dwelling. (Twenty-two of the city's social agencies have been called on to aid its occupants at various times.) Also, it is a poor asset to its owner, who can find no purchaser. In spite of the lessons that experience teaches of such overcrowding of land, legal restrictions are necessary to prevent it, says the Housing Association. Under the leadership of John Ihlder as Executive Director, this association is doing a valuable work in creating an informed public opinion such as will demand adequate minimum standards.

The Planning of Schools for the Use of the Whole Community

SCHOOL buildings should be planned not only for children to use during school hours but also for the community to use after school hours and during vacation periods, writes George Drayton Strayer, Professor of Education at Teachers College, Columbia University, in an article on "Planning the School Plant in Relation to the Recreational Needs of the Community," in the 1930-1931 edition of "The American School and University."

Recreation is now recognized as an essential element in the modern program of education, and schoolhouses no longer consist solely of a group of recitation rooms. Well-planned buildings include gymnasiums, auditoriums, shops, libraries, laboratories and music rooms. Yet unless the recreational needs of the community are taken into account, a building which may prove acceptable to a school may be found unsuited to the needs of the larger group. In planning schoolhouses for community use, the location and size of the building, the amount of playground space, the arrangement of the gymnasium, the need for provisions for dramatic and musical work, and the possibiilty of public use of the library and reading-rooms, and also of the laboratories and shops, should be considered.

School buildings should be relatively large, Dr. Strayer believes, in order to provide the best sort of educational opportunity. Before choosing the site the community should be studied and a careful survey made of the student population and the general population trend. Consolidated high schools should never be placed in the center of the city, as this means that children travel with the heaviest possible traffic both in the morning and in the afternoon. Also, it is generally easier to secure adequate sites for schools away from congested areas.

Recreation for children as well as for adults demands open space. Large playgrounds in connection with school buildings provide the best multiple utilization of city property. Every elementary school of any considerable size, states Dr. Strayer, should have a playground area of at least five acres. Every junior high school should have a minimum of ten acres, and at least twenty acres should be provided for senior high schools. Sites as large as these and larger are already being acquired in cities throughout the United States. Where buildings are necessary in congested districts, and the cost of land is prohibitive, unusual facilities, such as a gymnasium in the building and a playground on the roof, should be provided.

The gymnasium should preferably be built at the end of a wing or in some other manner in a semi-detached position with respect to the rest of the building, so that the two long sides are exposed to the light and air. Entrances to the gymnasium and to shower and locker facilities should be available for the public when the school is not in session, and it should be possible to completely isolate the school use of the gymnasium from that required by the public.

Auditoriums are being planned in all modern schoolhouses to offer an opportunity for the presentation of the work of those interested in drama and music. In elementary schools the auditorium should be small, but in junior and senior high schools, one or two thousand people should be provided for. A good stage, modern lighting, and provisions for presenting moving pictures, sound pictures and radio programs should be included.

School libraries are becoming more and more important, and if they are to be used by the public they should be provided on the ground floor, with separate entrances. The community may also be interested in using the facilities offered in modern school buildings by the rooms devoted to drawing, to science, to home economics and to the industrial arts. If additional storage space is provided in order to take care of materials and completed work of the adult group, all these laboratories and shops become available for the community's recreational program.

Two Million Dollars for Negro Health and Education in New Orleans

THE recent raising of $315,000 on a quota of $250,000 has assured for New Orleans a $2,000,000 institution for negro health and education, to be known as Dillard University. The Board of Education of the Methodist Episcopal Church and the American Missionary Association had jointly pledged the University $1,000,000; and the General Education Board, of New York, and the Julius Rosenwald Fund, of Chicago, a combined grant of $750,000; both conditional on New Orleans' obtaining through public subscription the sum of $250,000 to assist in financing the construction and equipment of the medical unit.

Flint-Goodridge Hospital, which has served the Negro population of New Orleans 33 years, is the foundation on which the new Negro health center and hospital will be built. The major portion of the work has been the care and cure of Negro patients who came to it voluntarily. It has heretofore had neither the facilities nor the money to carry on a program of health education for the prevention of illness among those not sick. The natural result of the lack of health information among most of the colored population, and the limited facilities for medical care and instruction in the prevention of disease, has been a high death-rate from pneumonia, heart disease, tuberculosis and venereal disease.

The program of cooperation between Flint-Goodridge Hospital and Dillard University, the carrying-out of which has now been made possible, provides:

1. Medical and surgical care of the sick, with modern equipment and laboratory facilities for the diagnosis and treatment of disease, and special instruction in hygiene and the prevention of illness.
2. Clinical instruction for Negro undergraduate medical students. Such opportunities for the Negro students in American universities are rare.
3. An increased number of internships for colored medical graduates.
4. Professional advancement of highly qualified physicians.
5. Opportunities for studying the peculiar susceptibilities of the Negro to certain diseases.
6. The study of Negro public-health problems and the training of Negro public-health workers.
7. Training under improved conditions of a greater number of Negro nurses.
8. Training of Negro technicians for laboratory, X-Ray, and electrocardiograph work, and for the development of administrators for negro hospitals.
9. The study of Negro social problems and training of Negro social workers.

NEW DOORWAY TO NEGRO HEALTH EDUCATION IN NEW ORLEANS

In addition to the obvious values of this program in improving the health conditions of the Negro and its corresponding influence on the incidence of disease among the whites, it will elevate the economic and living standards of the Negro and reduce destitution appeals on the public-charities purse.

Commenting on the over-subscription of the $250,000 campaign, which was conducted with the cooperation of the American City Bureau, Edwin R. Embree, President of the Julius Rosenwald Fund, says:

"The results of the campaign in New Orleans are amazing and evidence a new interest of white people of the far South in Negro welfare. For the first time in four years New Orleans has accomplished a quota set in a financial campaign. Its quota was $250,000 and it raised $315,000 at a time of depression, especially in that city. We regard the spirit manifested as highly significant."

The Future City—A City Planning Film

"Die Stadt von Morgen," Prepared by Maximilian von Goldbeck, of Nuremberg, and Erich Kotzer, of Berlin, Germany.

THE SATELLITE TOWN AS A MEANS OF AVOIDING FORMLESS CONGLOMERATIONS

Showing also separation of industrial and residential sections. Strips of park land lead from the center of the city to the open country

TO make clear the fundamentals and the aims of modern town planning, this motion picture film has been prepared. It gives an excellent means of explaining in readily understandable form the development of communities built in accordance with established plans.

The first part of the film demonstrates how haphazard and planless the development of cities has been and how much the individual, as well as economic life generally, has had to suffer from the mistakes and thoughtlessness of those who neglected to apply a well-defined system to city building. Contrasting with such conditions, the second part of the film shows the plan of an ideal city as an illustration of the fundamentals of modern town planning. It shows how creative determination can construct an organic community, and how, in this community, the requirements of economic life can be taken care of in full harmony with the interests of the individual.

A comprehensive, plastic bird's-eye view depicts the development of a typical little country town and its transformation into an industrial city—a process that has taken place in many instances during the last half-century. The planless conglomeration of industrial and residential sections is shown, the crowding together of the masses in tall barrack-like tenements, and the resulting economic and sanitary evils. Pictures of actually existing conditions illustrate the different phases of this development.

A Better-Organized Development Visualized

Then is shown a development of the same little town as it could have been achieved on the basis of farsighted and logical planning. The picture explains also how a regional plan is prepared and how the different sections of the future community have to be designated for their various purposes from the beginning. Views from real life are given. Well-chosen examples enable the spectators to visualize a better-organized future development of the little community.

The titles and explanations of the pictures have been prepared by Hans Haase, Dr.-Ing. Max Saume, Hans Stephan, and Werner von Walthausen, all of Berlin.

The execution of the idea would have been impossible but for the financial assistance given by the Prussian Minister of Public Welfare, the German Reichs Railways Co., the Regional Planning Societies for Central Germany and West Saxony, and the cities of Nuremburg and Hagen. The producing firm of Svend Noldan is said to have mastered the subject of the film with astonishing ease.

A Vivid Contrast

The authors of the film considered this juxtaposition of the haphazard growth of communities in the past, and the possibilities offered by developing a city along definite lines, as the best means of showing clearly the purpose of town and, especially, country planning. They recognize that there is a certain drawback in the rather abstract presentation of the example, which has been chosen at random, but also that the great vividness of the picture could be attained only by this method. Naturally, they say, the best way would be for every town to have its own town planning film—a review of all the mistakes made in the past and of the possibilities of future improvements. Such a film would have great historical and cultural value for ancient cities where the old sections, equally attractive from the town planner's and from the architect's viewpoint, are being restored and improved.

There is no attempt to participate, through this film, in the lively discussion whether the radial or the satellite system should be applied, primarily because the authors believe that the application of any given system is less important than the correct conception of the specific necessities, which are of course different in every case. The satellite system has been used in the film because it was found better suited to the requirements of the screen.

It is hoped that this film will convey to the responsible lawmakers a vivid conception of the ideal conditions which their laws should at least attempt to bring about.

Die Stadt von Morgen—The City of Tomorrow

"Now at last it has been accomplished!" says Dr. Werner Hegemann, one of the publishers of "Wasmuths Monatsheften für Baukunst und Städtebau," who for many years has discussed with various groups of experts the feasibility and desirability of such a film. In the May, 1930, issue of that publication the authors of the film present a statement of their work and its purpose, from which the article on this page has been prepared. Dr. Hegemann says he knows of no better school for the purpose of obtaining the application of common sense to town planning, than this motion picture.

Those who are interested to ascertain the terms on which they may secure the use of the film, "Die Stadt von Morgen," should address the producer, Atelier Svend Noldan, Budapesterstrasse 2, Berlin, W 62, Germany.

When Should Meters Be Replaced?

By ARTHUR T. SEAMAN
MECHANICAL DESIGNING ENGINEER,
METER TESTING AND CONTROL SECTION,
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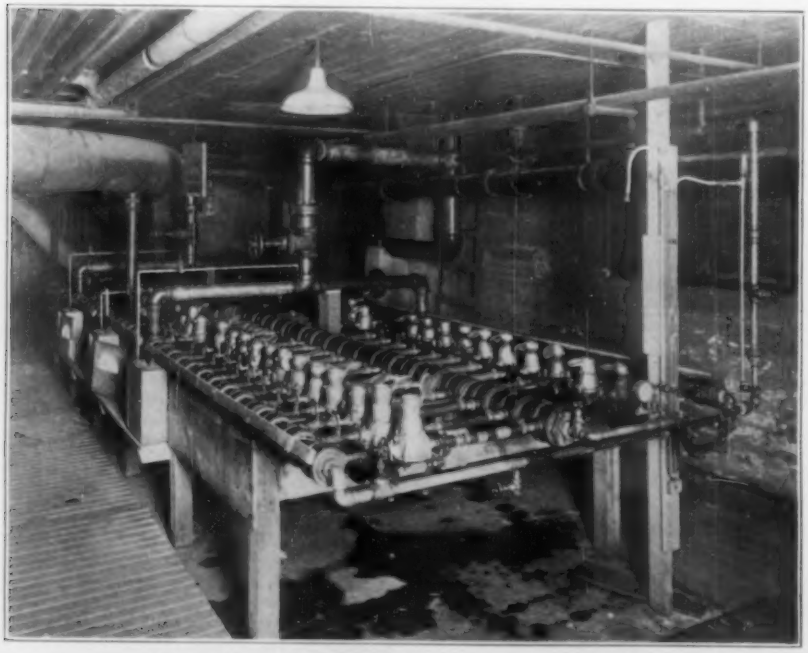
WATER meters are, in general, very rugged, well built and efficient, but like all machines, they are subject to wear, harder wear than most machines receive, for they are "on the job" for twenty-four hours a day, seven days a week. In order to maintain a metered system which will be an asset rather than a liability to a community, it is necessary that the meters register correctly the water passing through them, and the correct registering of a meter is seriously impaired by wear on the internal mechanism and frequently by changes in usage conditions. The replacement of these meters by the water-works superintendent or engineer is a problem which too often does not receive the attention which it warrants.

Reduce Monthly or Quarterly Readings to Daily Consumption

In order to determine the need of a replacement of meters, provided the meter has not stopped entirely, it is first necessary to make a study of the registration returns. Usually, meters are read approximately once a month or once every three months, but since the time interval between consecutive readings almost always varies a few days, all consumptions should be reduced to a daily basis for comparison purposes. The Meter Testing and Control Section of the city of Chicago keeps a record of this sort for all the meters supplying the larger consumers, and finds it to be of material aid in determining whether or not a replacement of these meters is advisable. The record sheets used are about 18 x 24 inches and each provides for a four year's record on twenty-five meters, showing at a glance the average daily consumption of these meters for each month of the four-year period. All meters supplying one consumer are grouped together, and suitable notations are made as to which of the meters are cross-connected; which, if any, are emergency or fire meters and ordinarily kept closed; the date the meter was installed or a replacement occurred; the date investigations of usage conditions, including a 24-hour record of the rate of meter registration, were made; and any special information pertinent to an understanding of the usage of water taken through the meter. As the readings are obtained from the meter reader's reports, the average daily consumptions for the past month are recorded on these sheets, and any drop-off in registration, be it large or small, is called attention to and an investigation started to determine the cause. Frequently an inspection of the registration returns of other meters supplying the same consumer will explain the decrease. Suppose there are two or more meters all cross-connected. A drop-off in registration on one may be compensated for by an increase on the other or others. In this case it is probable that the registrations of all meters will return to normal with a mere cleaning-out of the fish traps. In the case of a single meter on the supply to premises, a sudden drop-off in consumption may frequently be explained by an investigation of usage conditions.

Periodic check-ups of usage conditions should be made. The occupancy of premises changing, or a change in equipment, frequently changes the usage conditions materially. And for the most efficient operation of a meter it is essential that the rates of flow at which the water is used be known and that a meter of the proper size and type, to most accurately record these flows, be installed. If a check-up of usage conditions shows that the character of the flow has changed, then a corresponding change should be made in the meter equipment.



THE CHICAGO METER ENDURANCE TEST UNDER WAY

The Three Reasons Why and When!

There are three general conditions under which a water meter should be replaced:

1. *When there is a drop-off in registration which an investigation fails to justify.*—If there has been a record taken showing the rates of flow throughout a 24-hour period at some previous time, a repetition of this record will undoubtedly show that the lower rates of flow will be the ones which show more of a marked decrease. This will prove almost conclusively that the meter has reached the point where slippage is starting to occur.

2. *When the meter has reached a registration beyond which it is known that the wear on the moving parts becomes excessive.*—This, regardless of whether the meter has yet shown a drop-off in registration. If the rates of flow at which the water is used are *all* high, a meter may record, and be approximately 100 per cent correct, long after some of the internal parts have worn to a point where they should be replaced. If this replacement is not made then, some day the weak part will fail and the registration will stop completely. This results in either a loss of revenue until a replacement is made or the rendering of a bill upon an estimated amount of usage, which is something that should

be avoided if possible, as it usually causes dissatisfaction on the consumer's part.

3. *When the meter has reached a registration beyond which the slippage, at rates of flow at which the water is used, is probable enough to warrant a change.*—If a record has been taken on a meter showing the rates of flow during a 24-hour period, and this record shows that considerable of the usage is at low rates (for that size of meter), then this meter should be changed much oftener than one which has no low rate usage.

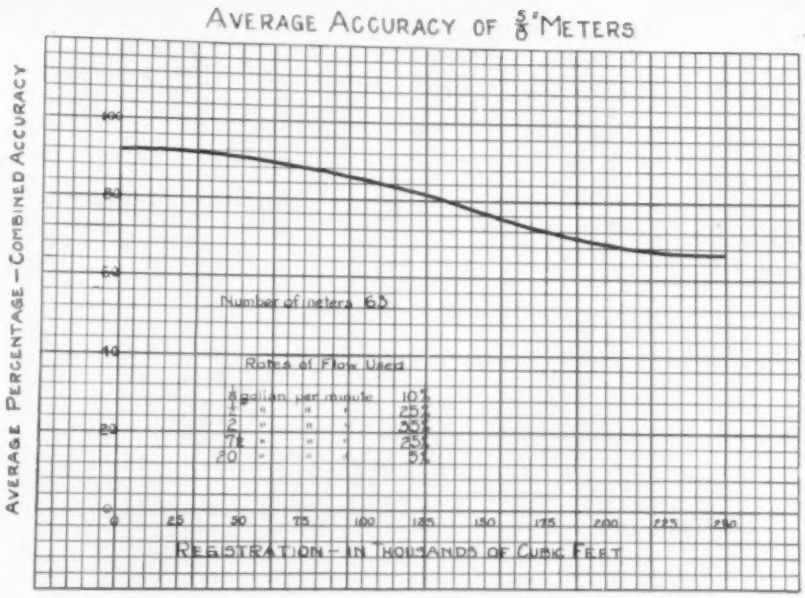
Selecting the Type of Meter

The need of a meter replacement having been decided upon, care should be exercised in the selection of the meter to be used. Information as to usage conditions should be up to date and if possible contain a record showing the various rates of flow at which the water is used and the percentage of usage at each rate. With this information on hand, a meter to fit the conditions can be picked from the stock available for replacement work. If the rates of usage are all fairly high for the size of meter under consideration, it will be possible to use one of the older meters, for these will be accurate at the higher rates of flow, although they are very apt to show considerable slippage or fail entirely under usages at low rates of flow. If the rates of usage at times get very high and the pressure conditions in the mains where the meter is to be installed are low, the type and make of meter to use should receive particular attention. There is a great difference at high rates of flow in the pressure drop through the different types and makes of meters. If a meter with a low pressure drop is replaced with one of a different kind with a high pressure drop, then at the times of maximum demand there may be difficulty in the consumer's getting his required amount of water. If the rates of usage vary and it is found that a considerable percentage of usage is at rates which are considered low for the size of meter under consideration, then in a replacement one of the best meters available should be used and it should be tested in the shop under rates of flow as near as possible to those to which it will be subjected when installed.

Replacements for Residences

In the replacement of meters supplying residences it is not profitable to spend much time in investigation of individual cases. The general character of the residences in certain neighborhoods should be somewhat of a guide as to their minimum consumption. If, upon installation of a meter, the consumption records are away below what is ordinarily used by similar places, the meter should be replaced. If the second meter still shows the low consumption, it can be considered as correct. When it comes to the replacement of residence meters in service, as good a rule as any is to rely upon the amount of registration and replace the meter when it has reached a certain figure.

It is the writer's opinion that ⅝-inch meters should be changed when they have reached a registration of from 75,000 cubic feet to 125,000 cubic feet. For the ordinary residence this will mean that the meter is replaced every four or five years. The repairs required at that time will not, as a general thing, be great—usually only a slight adjustment for the wear on the ball and socket.



RESULTS OF THE ENDURANCE TEST CONDUCTED BY THE BUREAU OF ENGINEERING OF THE CITY OF CHICAGO ON 63 5.8-INCH METERS OF 21 DIFFERENT MODELS SUBMITTED BY 13 MANUFACTURERS

Results of an Endurance Test

A few years ago the Bureau of Engineering of the city of Chicago conducted an endurance test on ⅝-inch meters which embodied practically every make used in this country. There were in all 63 meters, 3 each of 21 different models submitted by 13 manufacturers. Two hundred and fifty thousand cubic feet of water was run through each meter at a uniform rate of flow of 12 gallons per minute and tests were made for accuracy every 12,500 cubic feet at all rates of flow on each meter. The accompanying chart shows a curve drawn from the combined average accuracies of all 63 meters throughout the duration of the test. In determining these average accuracies, an attempt was made to proportion the percentage used for each rate of flow as nearly as possible to what it was believed the actual rates of flow through meters of this size in service would be. The rates of flow and proportional percentage used were:

⅛-gallon per minute	10 per cent
½- " " "	25 " "
2 gallons per minute	35 " "
7½ " " "	25 " "
20 " " "	5 " "

As will be noted on the chart, the average accuracy at the start of the test was only about 92 per cent. This was because of consideration of the low flow of ⅛-gallon per minute in the computations. This is a lower rate of flow than required for ⅝-inch meters in the standard specifications of the American Water Works Association, but nevertheless one which very closely approximates the leakage found in many residences.

The Joys of Being a City Engineer

IF you are James W. Costello, Chief Engineer of the Department of Public Affairs of Newark, N. J., you receive a salary of $15,000 a year, the highest salary paid any city engineer in the United States, according to *The Municipal Index for* 1930. This gives a list, with salaries, of the city engineers of all places having a population of 10,000 or over, according to the 1920 Federal Census.

If, however, you are city engineer in a city of 15,000 in the Middle West, conditions may be different. Writes one: "My salary as city engineer is $8 per day for time actually employed. No allowance for 'days off' or work on Sunday, such as hurry-up plans to get work ready to start, and for supervising contract work when the contractor sees fit to work on Sundays. I am furnished an office away back upstairs in an old abandoned City Hall, which office is far from being rain- and dust-proof and is very inadequately furnished with filing cases, etc."

What Disposition of "Junked" Automobiles?

THE Board of Trade, Borough of The Bronx, New York City, recently conducted a nation-wide investigation into practices of cities in the disposal of "junk" automobiles. For more than a year this body has been studying the situation with-

Courtesy of Bronx Home News

TYPICAL BRONX "CEMETERY"

in its own territory and cooperating with public officials in working towards the adoption of a definite public policy looking to the protection of public highways and private property against constantly impending conversion into cemeteries for the obsolete automobiles of the masses.

"Prospective property owners are confronted with the need of immediate outlay of from $100 to $200 to clear their lots of miscellaneous metal parts and dilapidated automobile bodies before they can build or otherwise improve their property," according to a recent article in *Bronxboro*, the Board's monthly bulletin. "On the Bronx highways wherever the houses are a bit scattered, every night there blooms a crop of these derelicts of no earthly use to anybody any more, placed there by otherwise law-abiding citizens who tow them to these sections, avoiding policemen, and abandon them."

These owners cannot legally dispose of useless cars at the city's land dumps. As an emergency measure, and in the absence of a definite policy, the New York City Division of Street Cleaning is keeping several gangs of men at work with oxy-acetylene torches to cut up these hulks, removing parts that can be sold for junk, or otherwise utilized, and carting the worthless parts to various dumps. The Division has authority, however, to remove wreckage only from *paved* streets, with no provision made for removals from dirt roads and from private property. Largely through instrumentality of the Board, it is reported, the Bronx Police Department is actively cooperating by making daily reports of abandoned cars to the Borough Headquarters, Department of Street Cleaning. With hundreds of thousands of automobiles becoming useless annually, the Board is convinced that something better than this makeshift arrangement must be arrived at. It is not convinced, however, that studies from other cities offer a solution.

Experience Elsewhere

"No large city in the country," it is reported, "has as yet worked out a thoroughly effective plan of disposal, and some cities have given the matter little or no attention." In Chicago and Detroit, abandoned automobiles are reported taken to the House of Correction to be dismantled by inmates. In Detroit, this is done at a profit of about $5,000 per month, less the salary of an officer in charge ($2,400 per year). In Chicago, "they realize from $10 to $30 on the average car."

In Los Angeles, Seattle, Cleveland, Columbus, and Philadelphia, the matter is in the hands of the Police Department. In the first four places, all abandoned cars are towed to regularly appointed places and, at intervals, are sold at auction to junk dealers, or others. In Seattle and Columbus, the proceeds go into police funds. In Baltimore, the Department of Public Works has jurisdiction to remove cars which offer obstructions to traffic, and, later, to sell them. In San Francisco, St. Louis, and Hartford, "junk" cars are dumped. In Hartford, the Board of Health has jurisdiction, and temporarily is dumping such refuse at a waterfront fill, with no further plan. In St. Louis, there is plenty of room for future dumping. In Houston and Kansas City "no particular problem exists."

The Board of Trade has transmitted a copy of the returns from other cities to Dr. William Schroeder, Jr., Commissioner of the new New York Department of Sanitation. Its own recommendation, at least for the present, is that "junk" automobiles be accepted at D.S.C. land dumps, specifically designated, or that they be accepted at D.S.C. waterfront dumps to be disposed of at sea; in either case the city, perhaps, charging a suitable fee for its services.

Six Special Fire Hazards

Dangers Demanding Exceptional Precautions for the Protection of Property and Safety for Workers and Fire Fighters

By J. H. HOWLAND

ENGINEER,
NATIONAL BOARD OF
FIRE UNDERWRITERS

WHEN a comparison is made of the hazards of industry of today with respect to those of even twenty years ago, it is readily seen that we are fast approaching an age where dangerous conditions are apt to arise in nearly any manufacturing process and in connection with the storage and sale of a great list of products. To successfully combat fire it is necessary for a fire department to have knowledge of many of these hazards. This knowledge is of greatest importance in that most modern means of fire fighting, which is the *prevention* of fires.

Flammable Liquids

The hazards introduced by a flammable liquid are those due to the facility with which this material gives off a dangerous and explosive gas, and the fluidity of the material—such that when spilt it spreads over a large area. Fundamentally, flammable liquids are not hazardous unless exposed to the air, as they do not explode or disintegrate into their component parts under any conditions of heat, and they become dangerous only when the gases are mixed with a relatively large proportion of air. All these materials give off vapors, but the temperature at which these vapors are liberated varies with the character of the material. It is well recognized that gasoline is continually giving off flammable vapors at ordinary temperatures; and other materials, such as carbon bisulphide and ether, liberate large quantities of vapor at a lower temperature than gasoline. The principal difference between liquids such as gasoline and kerosene is in the temperature at which each gives off a large amount of flammable vapor which can combine and cause a fire or explosion. Kerosene does not liberate these gases until it is heated up to temperatures in excess of 100 degrees, and some grades of kerosene, and all grades of lubricating oils, do not vaporize until much higher temperatures are reached. This temperature at which dangerous quantities of vapors are liberated is usually termed the flash point.

As a general statement, any flammable liquid which has a flash point of less than 75 degrees F., when measured in an official closed-cup tester, requires special consideration in connection with its storage and use. The fundamental basis of storage of these liquids, and to a certain extent those with a higher flash point, is to enclose them in a tight container and to have all transfer of the liquid, from one container to another or from the container to the point of use, made through a rigid system of piping such that there can be no leakage.

It is the handling of these liquids in open containers, the use of them in open vats or by direct application in the open air, that causes trouble through the liberation of the vapors. These vapors are heavier than air, are carried considerable distances by the wind, or by natural seepage, and gradually diffuse into the air. This diffusion gives a mixture which is either burnable or explosive. It can be ignited at temperatures of 400 to 600 degrees F. for materials of the petroleum class, and as low as 200 degrees F. for such materials as carbon bisulphid. It is thus evident that contact with glowing charcoal and open flame, or any other heat-producing device which has a temperature equal to those given above, will cause a fire or an explosion.

This matter of storage and handling of flammable liquids is present in connection with oil storage in distribution plants, paint and varnish factories, industries where paint, varnish and lacquers are used, in dry cleaning plants, automobile factories, the production of flavoring extracts and perfumes, the manufacturing of artificial silk, in hardware, drug stores and other places where paints and oils are distributed, and in many of the special industrial processes.

The safest form of storage is in well-constructed steel tanks; these should be underground in congested sections, as any above-ground storage introduces the possibility of flow of the contents in case of rupture from any cause. Where storage is not underground, there is considerable danger of an exposure fire heating the container to a point where the pressure on the inside will rupture the vessel or tank and allow the contents to become ignited. For this reason it is fundamental that storage be kept in as small a container as the situation will permit. The storage of flammable liquids in tin cans up to 5 gallons capacity and in ordinary drums up to 50 gallons capacity does not intro-

Knowledge as a Factor in Fire Fighting and Prevention

During the week of May 5 twenty-one fire school instructors were in Albany, receiving an intensive training in the lectures and evolutions to be taught in the eighteen municipal zone fire training schools which will be operated this summer in New York State under the direction of the New York State Conference of Mayors and the State Fire Chiefs' Association.

The instructors were trained to give lectures on courtesy of firemen to their superior officers and the public, fire prevention and building inspection, ventilation, care of fire-fighting equipment, hydraulics of fire streams, maintenance and operation of fire apparatus, salvage work, sprinkler systems, methods of fighting different kinds of fires, first aid and resuscitation, and use and care of gas and smoke masks. Instruction was also given in twenty-one standard evolutions.

The accompanying discussion of special fire hazards was one of the lectures delivered in this training course. The six types of hazards covered are: flammable liquids; dust hazards; chemicals; lint and combustible flyings; pyroxylin plastic; readily combustible materials. Suggested ordinances and regulations covering these special hazards are obtainable from the National Board of Fire Underwriters, 85 John Street, New York.

duce a very distinct hazard, but in any manufacturing plant it is wiser to isolate the storage so that it will not become involved in a fire originating in some other process. The construction of oil rooms is therefore desirable unless the storage can be placed outside the building. The application of flammable liquids, such as in painting processes, introduces a hazard in direct proportion to the amount of liquid used and the volume of the vapor liberated. Spray painting, the washing of material in flammable liquids, the mixing of compounds involving flammable liquids, such as shoe polish, and other industrial uses, all introduce considerable hazard because of the vapors liberated, and require special consideration as to ventilation and to isolation of the process from other processes carried on in the same building.

Dusty Conditions

Practically all organic material, such as wood, paper, starch, flour, and cattle feed, when finally divided to a point where it can be suspended as a dust in the air, introduces a distinct danger from fire and explosion. Many metals can also be so minutely divided that there is rapid oxidation, brought about by the presence of flame and sufficient air, which will give a severe explosion. In paint spraying where lacquers are used, the residue is often in the form of a fine powder; this can also give a severe explosion, as was shown in the destruction of the Briggs Body plant in Detroit several years ago. When inspecting plants which do grinding or which transfer material of a dusty nature from one floor to another, as in a grain elevator, particular attention must be paid to this danger of the liberation of a dusty cloud with the consequent explosion and fire. The principal safeguards are for the storage and handling of this material in closed bins and tight conveyor system. The other important factor is "good housekeeping." This term means the same in such a plant as it does in the home. That is, the entire plant must be swept and vacuum-cleaned and otherwise kept in dustless condition. This caution is applicable to any industry producing considerable quantities of dust, including wood-working plants where sand papering produces fine powdered wood particles. A very severe dust hazard is introduced in many plants which manufacture articles from pyroxylin plastic, which is the general name for the class of materials sometimes called celluloid.

Chemicals

It is difficult to lay down any special rule as to the storage and handling of chemicals to reduce the fire hazard, or to give a list of the chemicals most commonly found which will produce a fire or increase its intensity or affect the men who attempt to extinguish the fire. The only general rule which can be given in connection with chemicals is for the members of the fire department to learn of the location of any extensive storage or handling of acids or other chemicals and to see that the material is always kept in these places and not allowed to be in one place one day and another place at some other time.

A fireman is justified in not entering a portion of a building where nitric acid is stored, if that portion is on fire, and the same is true of some of those materials which disintegrate with explosive violence when water is thrown on them. When a manufacturing plant or a commercial establishment is known to contain considerable quantities of chemicals, it should be the first duty of the commanding officers of the companies which would respond in that territory to interview the proprietor or other responsible officials and learn from him as much as possible of the hazardous nature of the chemical. It is well recognized that this is a chemical age and many new materials are being brought on the market each year.

Most materials which are shipped by railroad or express are required to bear a label indicating whether they are of a hazardous or dangerous nature. In making inspections of chemical plants, firemen should look for these labels on the original containers, or on the containers which are being used to ship the material from the plant. The labels indicate whether the material is of a flammable nature or is a corrosive substance, or an oxidizing agent. Many substances are not in themselves hazardous, but when brought in contact with other material will cause fire or will add to the intensity of the fire. Most oils, particularly vegetable, fish, and animal oils or fats, tend to heat up when in contact with fibrous material such as paper or rags and thus result in spontaneous ignition. Some chemicals are explosive when in contact with combustible material. The oxidizing agents, which include mainly the nitrates and chlorates, liberate oxygen when heated up, and increase the intensity of the fire to a very marked degree. The nitrates are found in connection with most fertilizer plants.

Lint and Combustible Flyings

The hazard of these materials is usually found in connection with cotton mills or other establishments where fibrous materials are worked on. The hazard is that of a quick flash fire which will involve the main supply of material in storage or being worked on. The principal safeguards, again, are "good housekeeping" and the introduction of automatic sprinklers.

Pyroxylin Plastic

This material, often called celluloid or some other trade name, has a wide range of usefulness and can be found in many industries. Its base is nitrated cotton, which, after mixing with camphor, gives a strong, readily molded material that can be colored and worked into various shapes and forms. It has a low ignition point; is capable of decomposing without the addition of oxygen; liberates explosive and poisonous fumes when undergoing decomposition; and, when it burns with a flame, gives a hot, intense fire. The hazard to the occupants of the building and to the firemen is very high, and it is necessary that particular care be taken in the storage and handling of the material. All plants using this material, even in relatively small quantities, should be sprinklered and should have adequate provision for the storage of the main supply of the material, whether it is in the original form of sheets, rods, etc., or in finished articles. Each city should have definite ordinance requirements covering this material, and the members of the fire department, particularly those doing inspection work, should be thoroughly conversant with the regulations of the National Board of Fire Underwriters dealing with this subject.

Readily Combustible Materials

This section includes a large range of material in many forms. It includes lumber, cotton, excelsior, combustible fibers, paper, waste material, and others too numerous to mention. It is of course well understood that the extent and severity of a fire are dependent upon the amount of combustible material present and therefore the main object, from the fire department standpoint, in connection with such material is to keep the quantity as small as possible for the particular plant concerned. Another factor which is introduced in connection with this material is that most of it is relatively slow-burning when in a compact mass and the intensity of a fire will be materially increased when the material is stored loose. For that reason loose storage of any combustible material, such as excelsior, straw and other materials used for packing purposes, should be in metal or metal-lined boxes or bins, and the main storage should be isolated from other parts of the building as much as possible. Fire-extinguishing facilities are essential in plants storing or handling considerable quantities of combustible material.

Fire Extinguishment

No discussion of special fire hazards would be complete without considering the need and suitability of various types of extinguishing devices. First aid fire appliances, such as pails, chemical ex-

tinguishers, small hose lines and covers for hazardous liquid containers, are especially necessary to catch incipient fires. These should be provided in liberal amount in both small and large plants.

The most valuable fire protection equipment for any special fire hazard, except where this hazard involves flammable liquids and some chemical compounds, is an ordinary sprinkler system which, because of its nature, catches a fire in the incipient stage and either extinguishes it or holds it in check until an alarm can be transmitted to the fire department. These devices act as a constant watchman and have proved their worth through many years of improvement. The only objection is the amount of water damage which sometimes arises, but this is not such an important factor, as in most cases the fire damage which would have resulted if the system had not been provided would have far exceeded any water damage which might occur. Also, water damage can be materially reduced by providing an alarm device which will notify the fire department each time the system operates, thus permitting the firemen to shut the water off after the fire has been extinguished or placed under control.

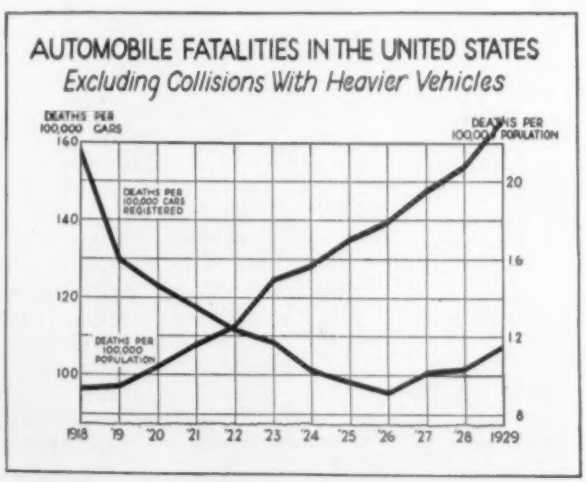
Another important fire protection feature is the installation of suitable signaling systems in connection with a watchman, so that assurance is made that the watchman is on duty at all times and provisions given him for the sending in of a fire-alarm. Also, instead of a system of this kind, an automatic alarm system, making use of a thermostat, can be provided which will transmit an alarm to the fire department in the early stages of a fire and thus permit the firemen to extinguish it before much damage has occurred.

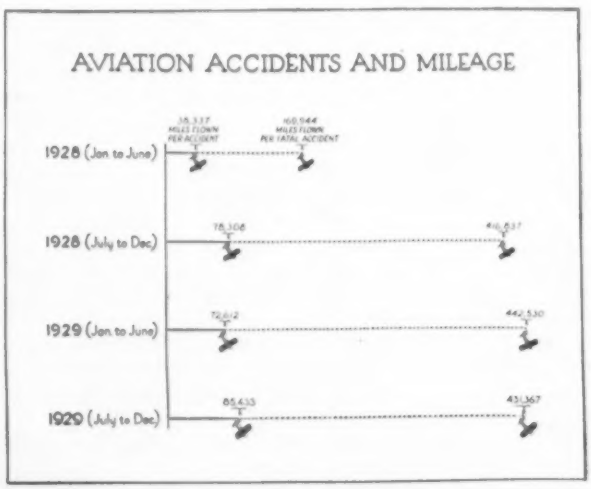
In plants of a general nature as discussed in this paper, the amount of material on hand is often very large and the damage done by water from an automatic sprinkler or from the hose line of the firemen is high. For that reason it is essential for proper provisions to be made to reduce the loss due to water damage. This includes the proper construction of the building to permit getting rid of the water without allowing it to go from one floor to another, and also the introduction and use of salvage work by the members of the fire department. In the inspection work the firemen should make particular note of points where large water damage may be expected, and take particular pains to prevent this water damage in case of a fire.

Construction Details

In factories, storage places, and mercantile establishments, which are the principal places where special hazards will be found, the construction details of the building are of great importance. In addition to the waterproofing of floors, as mentioned above, there must be adequate provisions to stop the spread of fire from one floor to another or from one special hazard section to the less hazardous portions where the finished articles are stored or kept. These finished articles are usually the highest values in the plant. It is not reasonable to expect all these structures to be of fireproof construction, and for many years the existing poorly constructed buildings will be used. In these every effort should be made to have the owner enclose stairways, elevators, and other means of vertical travel of the fire, and to isolate, either in an outside building or in specially constructed rooms, the main processes and the storage of material introducing the greatest danger from fire.

Automobile Deaths and Aviation Accidents





THE Statistical Section of the National Safety Council has recently published "Accidents Facts, 1930." The figures on motor-vehicle accidents reveal a steady rise in automobile deaths from 9.3 per 100,000 population in 1918 to 22.7 in 1929.

It is hardly surprising to find that the number of automobile deaths per 100,000 *population* continues to increase. There has been in the last decade a phenomenal increase in car registration. But this does not account for the marked rise in automobile deaths per 100,000 *cars*. The last three years have shown a distressing increase in this figure. From 1918 to 1926 the number of accidents per car declined, as the accompanying chart shows. Since 1927 there has been an upward trend. This can be explained only on the assumption of greater use of cars. The increased consumption of gasoline (probably with increased mileage as well) supports this theory. It is discouraging, however, particularly in view of the active safety campaigns of recent years, to note that motor vehicles killed twice as many people in 1929 as in 1922.*

Airplane accidents are a somewhat newer phenomenon. Civil aviation accounted last year for 485 fatalities. There appears, as the accompanying chart shows, some improvement in the ratio of accidents to miles flown, especially in the latter half of 1929.

After extended and careful investigation the Aeronautics Branch of the U. S. Department of Commerce announces that in 1929 about 57 per cent of all accidents were due to errors of personnel; 18 per cent to power-plant failures; and 10 per cent to some failure in the machine apart from the power-plant. Less than 5 per cent were attributed to weather conditions.

* But see page 23 of the June AMERICAN CITY.

Should the Public Schools Be Independent of City Hall?

A Debate Conducted for The American City by Lester Dix and Joseph McGoldrick, of Columbia University—Affirmative, Negative, Rebuttal and Rejoinder

The Case for Independent Boards

By LESTER DIX

MANY students of municipal government stoutly demand that the management of schools be subordinated to a logically unified municipal control. For them, administrative efficiency dictates that all public services within the community be unified in one responsible organization of trained managers. This argument has an attractive ring to administrative ears. It is none the less a superficial argument and one likely to be abandoned as soon as administrative science outgrows the handicap of having been born in an era when the technique of getting things done enjoys a temporary ascendancy over the method of finding out whether they are worth doing. A careful examination of the real justification of their own activities and those of the educators is necessary to the proper evaluation of their argument.

Control Delegated to the People

The most obvious fallacy is in their assumption that the education carried on within the community is exclusively a community function. The mere statement that education is a state function has not been a convincing refutation, because it represents too limited a view, and it is simply countered with the assertion that the municipal authority claims the control only of that part of educational activity that is delegated to the local community. It is forgotten that legislatures in general have not been willing altogether to delegate this power to the local governmental organization but only to the *people* of the community. This distinction, while seemingly trivial, is really the vague recognition of an important fact which underlies the whole situation. Education can no longer be limited to the community, the state, or the nation. True, it is legally a state function in this country, but this is merely an arbitrary convenience, holding over from the past when it was in accord with the fact of relative isolation. Today education is a universal function of society bounded only by the limits of communication, which is to say, world-wide.

Education is not a function of government and never was. In a democratically minded society it is a function of living. Rather than as a function of government, it is to be regarded as of at least coordinate responsibility. As a matter of fact, as the general enlightenment is enhanced, it increasingly takes precedence over government as a societal agency for promoting the ends of the group.

This last statement brings us naturally to the necessity of a vision of institutional agencies that shall see deeply into the realities of their functions.

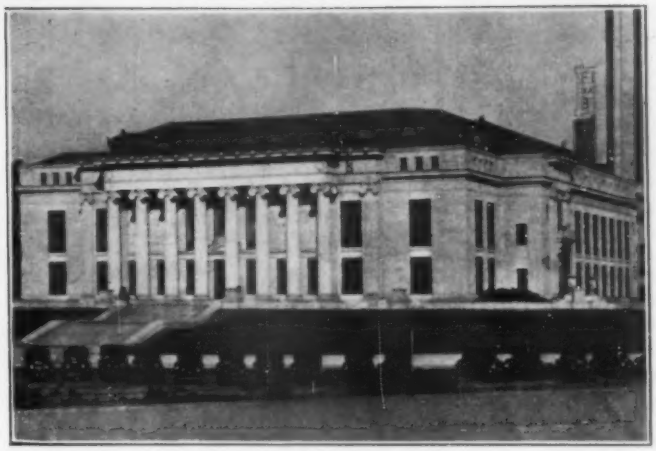
The Appeal for Group Confidence

What of modern government? It retains its chief vigor perhaps in socialistic types of thought. Such a future as it has as a dominant social institution would seem to be either in a successful experiment in frankly socialistic or communistic attempts, or in a modified capitalism in which most of the gains demanded by socialistic thought will be achieved by indirect means. It is sufficient to note the superior vitality of business over that of government, considered as agencies drawing their vigor from group confidence. Industry proceeds here to reform itself in the absence of any power of government to bring it into line with deep social demands. The real social forces of the modern state, with its democratic and scientific commitments, are education and industry. In so far as the sincere students interested in working out a science of government are successful in catching up with the procession, they may hope at best for a position of group confidence coordinate with education and industry. Is it too much to ask of school administrators and students of government that they face this issue with some inkling of the significance of these forces? Organized education, industry, and government are institutionalized agencies of the social will to achieve the richest possible group living. One and all they must finally stand or fall upon the service they offer to that demand. They compete with one another for group confidence, and the group is, all things considered, surprisingly canny in the bestowal of that confidence. It is this popular instinct which has insisted on the distinct position of education which seems so anomalous to some students of municipal government.

Thinking of societal agencies as competing for public confidence does not prevent thinking of this competition as friendly. If they are coordinate, they must become cooperative. Any other adjustment is wasteful and destructive. Common social welfare demands the welding together of all institutionalized activities into a unified organization for complete and efficient group service. The details of such a structure form a very long story yet to be written in a half-century or so of devoted research and administration. But nothing less will do.

The proposal to cripple the most vigorous and promising institution of American life by making it an appendage of a broken-down municipal government which is only beginning to attack its own desperate problems, is a vicious proposal couched in ingratiating terms. It should be uncompromisingly resisted by every educator, and relinquished by every thoughtful governmental administrator who recognizes the value of the support which will be given him by a vigorous and effective system of education.

The Case for Municipal Control of Education



By JOSEPH McGOLDRICK

THERE is a difference between urging that in a given situation practical circumstances make it unwise to turn a good public education system over to a bad city government, and arguing that public education is so peculiar a public function that it must logically have a separate institutional status from all other public functions. Mr. Dix in the foregoing statement seems to regard government as something essentially regulatory in character, following the etymology of the word, and therefore not the proper custodian of public education. This overlooks the fact that government, besides providing and administering an ever-expanding body of rules of the game of living under modern, complex, urban, industrial civilization, is providing an astounding volume of public services. Our governments, among many other activities, build roads, carry and distribute mails, clean streets, remove snow, care for the indigent sick and aged, provide public recreation and furnish business men, farmers and a host of others with information of all sorts. These service functions of government today consume a far greater proportion of our public budget than the regulatory duties that the word *government* connotes. If Mr. Dix does not like to embrace this multitude of activities which now occupy our political units within the term *government*, he must provide us with another word.

Our Theme Is *Public* Education

On the other hand, what Mr. Dix has to say about the breadth and scope of the idea of education is all very true, but somewhat beside the point. Granting that education includes every means of communication of ideas, the term *public education* has no such expansive meaning. Likewise, recreation includes an endless variety of private, group and commercial activities, but public recreation has a much more limited scope. And I venture to suggest that there is not a professional educational school in the country that actually deals with the newspapers, the magazines, the entertainment moving pictures, the theater, the fraternal orders, and any of a dozen other instruments of popular education as part of its general curriculum. They all deal with formal public education and it is this alone with which we are here concerned.

The service functions of government have grown up without any plan or purpose in the last century and a quarter. Frequently, separate governmental entities are brought into being to provide them. Many cities today have separate park districts, sewer and sanitary districts, and other odds and ends. There are always those who feel that these activities will fare better if kept separate from the general city administration. In logic there is no more reason why education should be specially set-up than parks or sanitation. There is, of course, but one public. No one proposes that this should have any less control over public education than over the rest of the functions which it depends on government to perform. The question is solely whether it will get better results by putting all its governmental eggs in one basket or whether the educational egg shall have a separate basket. Experience appears to demonstrate that the fewer officials the public elects, the better the job it will do. It is also reasonably clear that the election of school boards is less satisfactory than appointment, especially in larger cities. Popular election for any but a few conspicuous, policy-determining officers is a delusion and a snare.

In a particular situation one can appreciate Mr. Dix's reluctance to see education turned over to an incompetent or corrupt city government. His attitude is perhaps analogous to that of the opponents of government operation of public utilities who concede its desirability in theory but object to the character and incompetence of existing local governments. Perhaps it is analogous also to the unwillingness of suburban populations (at least after they have secured their elementary public improvements) to be incorporated in the large city whose benefits they enjoy but whose burdens they would escape.

The Beneficial Effect of Responsibility

In both these cases it might be urged that the reverse of this policy might be the way to improvement of the city government. If a city government was entrusted with a rapid-transit line, the public might take more interest in that government and be less tolerant of inefficiency and corruption. If the suburban emigrants from our larger cities could not so blithely leave the city to stew in its own political juice, we might have better city government. May it not be argued that if the forces that secure relatively high standards in our public education systems had to deal with them as part of a general city government, we might have better city governments without sacrifice of educational accomplishment?

The logic, at least, is on the side of a unified city government, with costs of all activities considered in relation to each other and to the financial resources of the community. Mr. Dix's reasoning would of course lead him to the erection of a separate educational corporation in the state which would not be a part of the state government but coordinate with it. The same logic would doubtless point to a national structure paralleling our national government. Instead of striving for a federal cabinet place, one might expect a constitutional amendment for the election of a national board of education. But we cannot run away from the unwisdom of making our governments too complex and too intricate for popular understanding. There may be no royal road to good government, but, other things being equal, simplicity focuses responsibility and fosters responsiveness to the public will.

Mr. Dix's Rebuttal

MR. McGOLDRICK and I see so nearly alike in the long view that it would seem ungracious to be insistent about the differences if the implications for current public policy were not so important. The differ-

ences seem to me to boil down to two. He apparently places somewhat more reliance upon a technical logic in dealing with institutions growing and evolving in response to public demands and pressures, and competing for public confidence. The public generally demands and measures results in an uncertain, cumbersome and incoherent fashion and cares not a hoot for logic. It does not know whether it wants its libraries and its recreation managed by the municipality or the educational authorities, but it is so far, in typically American communities, fairly certain about its children's education, and increasingly so.

To show why this is true takes me into the second difference. Mr. McGoldrick refuses to allow me a special place for education as an institution coordinate with government. The answer seems to me to lie in the dim perception by the public that the only hope of a future public intelligent enough to respond to the kind of government Mr. McGoldrick and his colleagues are trying to build lies so largely in a vital and unhampered educational system. The public knows that government has not yet been made safe for education. Until the science of government destroys the grip of the hard-boiled gentlemen who hang grimly on to a unified budget because they know that the people will not curtail the education of their children, separation will continue to be good popular logic.

Being rendered absurd in terms of the logic of Mr. McGoldrick's final paragraph does not frighten me, because I lack reverence for this sort of logic. A study of the recent trend in state support of education will disclose something very like the absurdity he pictures, in a machinery nominally amenable to government but actually separated and protected from the capricious action of current legislatures. This is to me a logic which is really facing the facts of contemporary public interest.

Mr. McGoldrick's Rejoinder

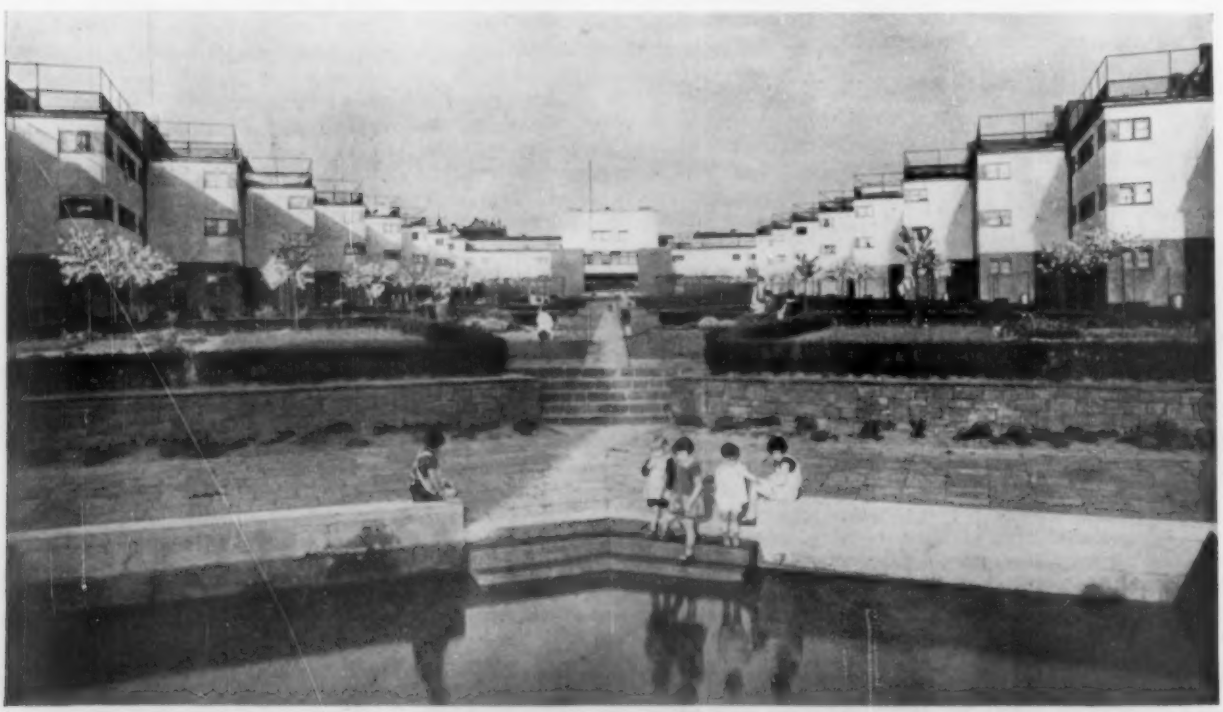
MAY I frankly confess that I find Mr. Dix's rejoinder more cogent than his initial statement, because he now abandons logic and clings warmly to immediate concrete circumstance.

We differ on what in the present would promote the future we should both like to see. There is, after all, one public. All policies must emanate from, or be consciously or unconsciously acquiesced in, by that one public. Mr. Dix is satisfied that the public manages its educational affairs well, and he is equally confident it manages its general affairs badly. I am sure of neither. There are certainly many school districts which run niggardly and narrow-mindedly. There are other public functions that in many instances are run as well or better under an orderly arranged city government, and there are certainly some cities that are run well as a whole. The Catskill and Hetch Hetchy water systems are examples of undertakings that are concerned with imagination and carried out efficiently under governments.

Important as is the education which the next generation is receiving at our hands—and, like Mr. Dix, I am a teacher—their health, the food which they eat, the houses in which they live the other nineteen hours of the day, and the city in which they are to live when they grow up are, I submit, hardly less important. Just as the child is nature's objective in the entire institution of the family, so may not the children be the end and be-all of society as a whole?

But this brings us not to dualism, but to unity. We must look at the facts of societal existence squarely in their complex and composite relationships.

A Modern Housing Unit in Frankfort, Germany



As a result of the public programs of housing betterment in Frankfort initiated in 1926, large areas of the city have been redesigned, and strikingly modern building-groups have replaced obsolete dwellings. The above multi-family block development where all homes face on an interior garden area, and where a wading pool is the central motif of the unit design, is typical. This illustration is reproduced from "Das Neue Frankfort," a monograph issued by the International Housing Association, Frankfort-on-the-Main

Municipal Housekeeping—Part II

The Problem of Caring for the City's Wastes—Garbage, Ashes, Refuse and Street Cleaning

By JOHN H. NUTTALL
CONSULTING ENGINEER,
PHILADELPHIA, PA.

Separate Collection

GARBAGE must be transported in watertight, covered wagons to prevent odors and drainage in transit. The quantity removed from each house is so small where it is collected separately from other wastes that horse-drawn vehicles are most efficient excepting in apartment-house sections and where the hauling distance is long. Garbage is collected separately in cities where it is used for fertilizer, fed to hogs, or converted into fertilizer base and grease by the reduction process. The garbage in these cases should be free from cans, bottles, sharp objects and corrosive substances that would injure soil, machinery or the digestive organs of animals. It should be placed for collection in a clean, impervious can with a tight cover to prevent leakage, the scattering of the contents by animals, and the collection of flies.

Mixed Collection

Rubbish is collected separately where it is separated into constituents in a reclamation plant or where it must be kept separate from garbage to permit the utilization of that waste. It may be reclaimed, burned in an incinerator or dumped when collected separately. Rubbish is so bulky that light trucks with large, light bodies usually prove most economical in its collection. The bodies must be tight and covered to prevent litter and dust in transit. Rubbish should always be placed for collection in tight, well-tied bundles.

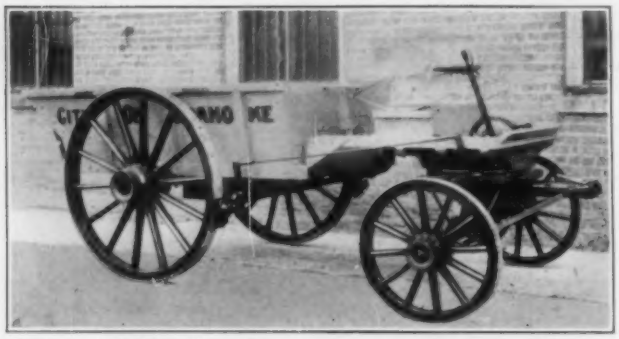
Garbage is collected mixed with combustible rubbish where it is burned in an incinerator, and with complete rubbish where it is dumped. The quantity of the combined wastes collected from each family is usually sufficient to render the use of trucks economical in this case. Either mixture should be placed for collection in a tight, well-tied bundle after the garbage has been drained.

Ash Collection

Ashes are of small importance in the warmer sections of the country, but form the major portion of the winter refuse in the colder states. They have no salvageable value and are invariably dumped. Trucks usually prove most economical in their collection and should have tight bodies of sufficient size to carry the proper weight for the size of truck used.

LAMENTABLY TYPICAL EXAMPLES OF THE WAY GARBAGE, ASHES AND RUBBISH ARE PLACED FOR COLLECTION IN AMERICAN CITIES

1. Garbage or kitchen refuse in an improper container and spilled over the curb. 2. An accumulation of rubbish that may be all over the block before the collector arrives. 3. Ashes and rubbish in a heterogeneous collection of containers awaiting collection



Courtesy of Hackney Wagon Co.

THE TYPE OF WAGON USED FOR GARBAGE COLLECTION IN MANY CITIES IN THE SOUTH

Ashes are often collected mixed with rubbish, in which case the trucks must have bodies with detachable sides in order to provide variable capacity at different seasons of the year. Ashes, or mixed ashes and rubbish, should be placed for collection in tight metal receptacles with well-fitting covers. The receptacle should not hold over 150 pounds, as it is difficult to dump more than this weight in collection vehicles.

Determining the Collection Routes

The collection is not made casually, as the citizen often believes, but in most cities the routes are carefully designed by competent engineers. Each route should produce an equal amount of refuse daily, or the number of loaders and vehicles would vary continually. The center of each route should be equally distant from the place of disposal, or the number of trucks would vary even when the quantities were equal, and this would increase the cost of collection, as a number of trucks equal to that required on the heaviest day would need to be retained. The routes should slope from the collection area to the disposal point in order to permit the loaded vehicles to proceed down-hill. Each route should have several traffic streets leading from it to the place of disposal, in order to avoid vehicular congestion.

The design of such routes is not simple and is further complicated by the desirability of having the streets of each route of equal area in order to permit the use of street-cleaning gangs of equal size on each day of the week, and to have a gang follow after each collection.

Collection Vehicles

Wagons are the most economical collection vehicles when the quantity removed at each stop is small and the distance to the place of disposal is short, and trucks are best when the quantity is large and the hauling distance is long. Trailers that may be drawn by horses while collecting and by tractors in trains of two or more trailers when en route to the dump, combine the advantages of both types of vehicles.

Vehicles should always be clean, tight, noiseless, easily loaded and dumped and bear a number for identification by citizens. A sufficient number of loaders must be provided to load the vehicles promptly, in order to secure the best efficiency from each vehicle.

European Methods

European cities often require standard receptacles that fit slots in closed bodies on the collection vehicle and so prevent dust and litter while dumping the receptacles. Other European cities remove the refuse in the containers on special vehicles and leave a clean receptacle in place of the one removed. The receptacles are sometimes provided at the expense of the municipality, sometimes owned by the residents, and in other cities are owned by the municipality and rented to the citizens. This system is far preferable to that employed in America, as the litter and dirt on the streets from refuse placed for collection are avoided, but it is difficult to secure the necessary funds from the municipal legislatures and to persuade citizens that the necessary uniform receptacles are not specified in order to favor the product of some special manufacturer.

Distribution of Labor

The force employed must be used each day of the week, and every section of a city opposes collection on Monday and Saturday. Collection during the day is usual and preferable to night collection in residential districts. Day collection is undesirable where shopping crowds gather, and collection from business districts is therefore often made at night. Collection at night obviates the presence of refuse on the street during the day, when vehicular travel is greatest, but refuse and collection vehicles are objectionable in the early evening in residential and amusement sections, as most pedestrians are on the streets at that time. Collection may be made after midnight in retail and amusement sections, but is objectionable in residential sections, because sleeping is interrupted by noise. Collection may be made more efficiently and economically during the day.

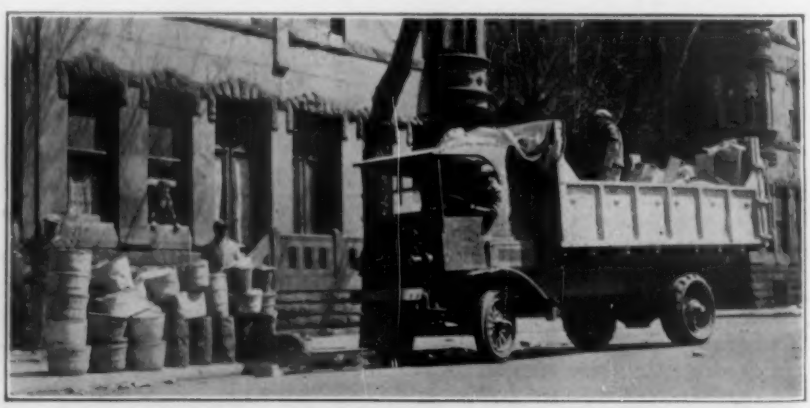
The organization and supervision of collection call for a high degree of technical knowledge and skill, as well as long practical experience. The design of routes, the choice of collection vehicles for specific conditions, the selection of disposal methods, and the coordination of collection and disposal, in addition to the management of large masses of men and the ability to please the public in our large cities, require men of great ability and experience if the work is to be conducted without huge waste of the public funds.

The work of collection must proceed day and night without ceasing for wind, rain, snow, ice or heat, and some organizations pride themselves that no waste has ever been left uncollected on the regular collection day during many years.

The average citizen also gives little thought to the final disposition of the collected refuse, but waste disposal is one of the most important problems in our cities.

Dumping on Land

Dumping on land is the most common manner of disposing of wastes in this



TYPE OF MOTOR TRUCK USED IN MANY LARGE CITIES FOR THE COLLECTION OF ASHES AND RUBBISH

Courtesy of Highway Trailer Co.

A TRAILER TRAIN WITH CANVAS COVERS, A METHOD OF REFUSE COLLECTION WHICH IS BEING USED INCREASINGLY IN THE UNITED STATES

country. Ashes free from other wastes make solid filling material, and places of disposal for this purpose are readily found close to the collection areas in the smaller towns. It is often difficult to find dumps at an economical wagon- or truck-hauling distance from the center of large cities, and the refuse is collected in vehicles and relayed in railroad cars or barges in some cities. An ash dump is seldom objectionable unless the surface is disturbed by vehicles or wind, in which case there may be annoyance from dust within a considerable radius. A layer of dirt over the surface of the dump will alleviate this nuisance.

A mixture of rubbish and ashes is frequently dumped in our cities. The objectionable features of this mixture increase with the percentage of rubbish, which is less in the winter than in the summer, and greater in the South than in the North. A mixture containing much rubbish is worthless for fill, and houses built upon it may settle during a period of many years. Many persons have lost the savings of years in houses built upon material of this character. A mixed refuse dump is inflammable and fires frequently fill a neighborhood with foul odors and smoke. The fires are dangerous to adjoining properties and are difficult to extinguish. Such a dump produces odors, litter and dust, and is a lurking-place for rats, fleas, flies, and other vermin that transmit disease.

Rubbish is often dumped, and it is rare that one does not pass a dump that mars the entrance to an otherwise attractive town. The rubbish dump is worse than one of mixed rubbish and ashes, and should be tolerated only in waste lands at a distance from habitations, and building upon it should be prohibited for at least thirty years.

The dumping of pure garbage or the mixture of garbage with any other waste upon a dump should be absolutely prohibited, although this method of disposal is utilized in several backward towns of large size. Garbage is sometimes dumped in pits and covered with earth, but the contents of the pits do not decay to an inert inoffensiveness for several years unless the pits and the earth covering are shallow, in which case odors may arise during the period of decay.

European refuse is not inflammable or exceptionally dusty, but contains sufficient organic matter to breed rats, flies and other vermin, and has a faintly musty odor that is objectionable. Much is heard of European incineration and salvage, but over 40 per cent of all European refuse is dumped on land.

A dump must have careful supervision in order to avoid nuisance and secure cheap disposal. Quarry holes and swamps are the best sites, but hills are made upon level land with refuse in some cities of Europe. A road must be constructed into the dump, and a tractor or lead horses must be kept ready to help the heavily loaded vehicles to the dumping point, as the loads hauled on smooth city streets would be too heavy for the horses or motors to pull over the dump surface. Care must be used not to allow the vehicles to slide over the edge when dumping, and yet to dump the material so that it needs little spreading. Material must not be dumped so that it will obstruct natural drainage, and drains of tile, concrete or corrugated pipe must be laid where necessary.

A tractor with a bulldozer, or pusher blade, is valuable for spreading and leveling the dumped material on large dumps, and laborers are employed to aid in this work and help unload the vehicles. Watchmen should be retained to prevent fires, and water pipes should be laid on every dump to extinguish fires before they gain headway. The dump should be covered with a layer of clean dirt at the end of each day's work. A wire fence and a screen of fast-growing bushes will prevent litter from being blown from the dump about the vicinity and will hide the dump from view.

Disposal by Dumping in Water

Dumping in water is a method of disposal utilized in cities adjacent to the ocean, or situated upon bodies of water where the refuse may be used to produce islands or increase the shore area in shallow places. This method is used in both Europe and America. It is satisfactory only if the refuse is restrained by bulkheads, fences, jetties or similar structures and not permitted to float before winds and currents to defile some attractive beach. One great American city loads its refuse on barges and dumps it miles at sea, but portions of the rubbish and garbage float a distance of a hundred miles with favorable currents and disfigure the beaches of the New Jersey and Long Island coasts. A suit to restrain the city from this practice is now in process.

Disposal by Burning

Incineration is the destruction of all organic matter by fire, so that the re-

Courtesy of A. Mason Harris, Chief, Bureau of Streets, Richmond

A WELL-MADE DUMP IN RICHMOND, VA.

The site is a quarry-hole 20 feet deep and is in the residential section, but has been made without a complaint, because of the precautions taken. Dumping proceeds in thin layers to secure compact fill. Water and a dump tender are at hand to prevent fires and every effort is made to prevent dust. This picture also shows the type of truck used on long hauls in Richmond

Courtesy of Robert B. Brooks, Director of Streets and Sewers, St. Louis

LOADING A BARGE WITH REFUSE AT ST. LOUIS, MO.

maining mineral or incombustible material is odorless and free from germs. A sufficiently high temperature melts many, and vaporizes a few, of the mineral constituents to a hard, compact form called clinker. Incineration is therefore the most sanitary method of refuse disposal, and is perhaps the most generally satisfactory method if cost and consumption are not considered.

Low-Temperature Cremation

Garbage contains over 70 per cent of water and will not burn until this percentage has been reduced to approximately 30. The method of incineration by which the garbage is dried by heat until it will burn is termed cremation. There are many types of crematories in use, principally in the southern states, but the underlying principle is the same in all cases. The garbage is dumped in thin layers on drying grates in a long, rectangular brick furnace, in order to expose a large area to the hot gases produced by fires of coal, wood, oil, or gas in a separate fire-box at one end of the furnace. The garbage is burned on the drying grates, or upon other grates to which it is raked, when it is sufficiently dry to burn. Many crematories are poorly designed, constructed, and operated, and lack of funds frequently prevents the use of enough fuel to maintain a temperature high enough to prevent the issuance of odors, smoke and unburned particles from the chimney.

Rubbish may be burned in the open, or in a simple type of furnace, as it is a free-burning fuel when dry. A rubbish furnace may be no more than a fire-brick box containing a grate and baffles, with a chimney of sufficient area and height to allow all particles to burn before reaching the top. Cans, bottles and most metals are not melted at the temperature reached in the ordinary crematory or incinerator.

High-Temperature Incineration

The incineration of a mixture of rubbish and garbage is increasing in the larger cities. The rubbish supplies heat to dry the garbage, after which the mixture burns as a whole at a higher temperature than is common in crematories, so that mixed-refuse incineration is less offensive and more efficient. There are two principal types of mixed refuse incinerators and several other types that are in less general use.

One type, patterned after those in England, is in the form of a rectangular brick structure that encloses four grates separated only by a low wall of fire-brick. There is an inclined hearth of brick at the back of each grate, upon which the refuse is dumped through a hole at the top of the furnace, to be dried. It is pulled forward upon the grate, when sufficiently dry to burn, by stokers with long iron rakes. The hot gases produced by the burning pass out at one end of the furnace into a rectangular combustion chamber, where they mix and burn completely and then pass into the chimney through long flues. Forced draft from large, electrically driven fans accelerates the combustion. The ashes are pulled from the grates into small cars by the stokers; the cars are pushed along a track to an elevator; raised and dumped into an elevated hopper; and loaded into trucks, cars or barges through chutes.

The second type consists of a rectangular steel box with double walls enclosing water between them. There is a lower grate in the box or boiler, with an upper basket grate composed of pipes kept cool by circulating water, into which the refuse is dumped through an opening in the top of the furnace. The refuse is dried in the basket grate, and pulled through the space between the pipes onto the lower grate, where it burns to ashes. The ashes are removed in the same manner as in the previous type of furnace. Steam is produced in the boiler and may be used to operate the fans, pumps and other plant accessories.

Mixed-refuse incinerators operate at temperatures of 1250 F. to 2000 F., which destroys organic matter but does not melt cans, bottles or metals other than lead and zinc. The ash is soft excepting for occasional small clinkers composed principally of melted glass.

A properly designed and constructed incinerator may be operated in an efficient and sanitary manner. The most sanitary incinerators are those in which the refuse is stored in pits of concrete and charged in the furnace by a crane, and the most insanitary plants are those in which the refuse is stored

Courtesy of Morris Hacker, Supervisor, Department of City Refuse, District of Columbia

TRUCK UNLOADING GARBAGE INTO RAILROAD CARS TO BE HAULED TO THE REDUCTION PLANT ABOUT 30 MILES DISTANT FROM WASHINGTON, D. C.

This picture also illustrates the covered sanitary trucks used and the wet character of the local garbage. The garbage of Washington is probably richer and greater per capita than in any other city

Courtesy of the Nye Odorless Incinerator Corporation

TYPICAL NYE INCINERATORS, FROM THE ATLANTIC TO THE PACIFIC

1. The incinerator at Los Angeles, Calif., a unique design to conserve space on a flat site. 2. The incinerator at White Plains, N. Y. 3. A small incinerator at Jackson, Miss., which is typical of plants in small towns

on an open floor and charged by laborers. In small plants, refuse may be charged directly into the furnaces from the collection vehicles.

There are no valuable by-products from American incinerators. The ash and flue dust have no value for any purpose, and it is doubtful whether steam can be produced economically excepting under exceptionally favorable circumstances. The method is excellent, but costly.

Complete household waste consisting of ashes, rubbish, and garbage can be incinerated, but nothing is gained by passing a large weight of sterile, compact ashes through a furnace at a high cost.

Incinerator Practice in Europe

Incineration in England and continental Europe is essentially different from that in America. European refuse contains a much smaller proportion of valuable constituents than American, but these constituents are almost invariably salvaged and only the worthless material is burned. European ashes often contain a higher proportion of unburned fuel than ours, due to the less efficient heating plants in use there, and the larger cinders are burned to produce steam after the fine, worthless material has been screened from them. The furnaces operate at high draft pressures and temperatures as high as 3000 F., and are usually provided with steam boilers, and the necessary electric power producing apparatus. This is more economical than in America, as large unit electric plants are not so common as in this country, and labor is cheaper. The high temperature melts all refuse into a hard, compact clinker resembling stone. Expensive equipment is necessary to extract the clinker from the grates, and it is difficult to dispose of it at a profit, although every effort is made to find possible uses for it.

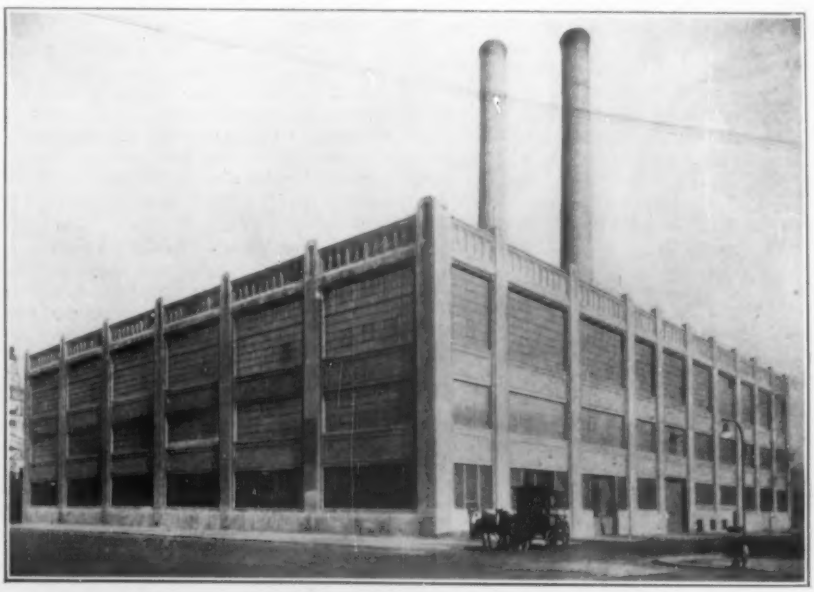
Salvage and Feeding to Hogs

Utilization and salvage are processes by which refuse is used for some economic purpose. Utilization means using the refuse with no treatment, and salvage implies the separation and treatment of valuable constituents from the worthless material.

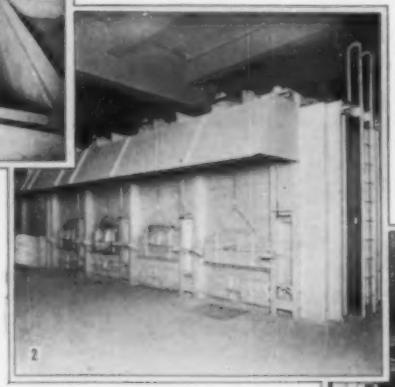
All refuse has some value after it has been discarded from the home. Ashes have the least worth and are seldom of salable value. They are occasionally collected free by contractors or others needing filling material.

Garbage contains elements that are valuable for fertilizer. Raw garbage contains acids that tend to sour soil, but decayed garbage has considerable fertilizing value. The value of rotted garbage is known to farmers, who prepare compost by spreading garbage in layers alternating with layers of soil and allowing the mass to rot until the garbage has thoroughly decomposed. This process is completed in from one to three years.

Garbage is a valuable food for hogs, and the meat of the garbage-fed animal is as good as that of animals fattened by other methods of feeding. The revulsion against meat from garbage-fed hogs would be less if the unspeakably filthy method of corn-fattening in the Middle West were commonly known.



A STERLING INCINERATOR IN NEW YORK—ONE OF THE LARGEST INCINERATORS IN AMERICA AND BUILT IN THE HEART OF THE CITY, WITH THE GENERAL APPEARANCE OF AN INDUSTRIAL OR FACTORY BUILDING



TYPICAL SCENES AT GARBAGE AND REFUSE INCINERATING PLANTS

1. The crane at the New Orleans, La., incinerator which removes the vehicle bodies. The skips which are shown to the left are carried on wagons for collection. The wagons enter the area shown at the right and the bodies are lifted off by the crane and stored until they may be dumped in the furnace. 2. The stoking floor of the Sterling furnaces at New Orleans. Photographs 1 and 2 are used by courtesy of C. O. Bartlett & Snow Co. 3. A typical ash tunnel of the Heenan incinerator at Buffalo, N. Y. Photograph by courtesy of Hiler Engineering Co.

Cattle and hogs are confined in the same enclosure. Corn is fed only to the cattle, and the hogs must obtain their food from the corn that appears in the cattle dung after passing through the cattle undigested. Hog feeding is the cheapest method of garbage disposal and the only method that pays both the cost of collection and disposal, but a hog farm is usually conducted carelessly and is offensive through a wide area. The practice is being abandoned in many states under pressure from health authorities, and the maintenance of hogs is forbidden in many cities.

The August issue will contain Mr. Nuttall's discussion of garbage disposal by reduction and the important subject of street cleaning.

Community Organization Demonstrates Value

How the Ideal of "Living Service" Spread Out from an Oregon Blacksmith's Shop into a State-wide Movement

EARLY in 1922, representative men from all parts of Linn County and from various walks of life met at the Riverside Community House and organized the Linn County Open Forum as an experiment in human relationships. The purpose of the founders was to form an organization that would attempt a united effort in promoting the material, social, moral and intellectual welfare of the residents of the county. For nearly eight years this adventure has been justifying the faith of its initiators by taking a firm root and yielding fruits of development.

This opening paragraph of an article on "The Community Organization Movement in Linn County," by Thomas Potwin, in *The Commonwealth Review*, a Journal of applied social science, published at the University of Oregon, challenges interest in further details:

"The policy of the Forum is thoroughly democratic. It has for its object, as set forth in its constitution, the initiation and promotion of worthy community interests, the encouragement of inter-community intercourse and cooperation, and the development of an intelligent citizenry. It recommends no arbitrary program to the various committees or to the county as a whole, but it 'obligates itself in fellowship and brotherhood to lend all assistance within its power to all communities seeking cooperation in whatever may prove to be worth-while community undertakings.'

"In carrying out this program, every community, under the guaranty of the Forum's constitution, stands within the Forum on equal terms. Each town or community is represented on the executive committee by one person who is selected by the community, as each community has its unit organization which is a member of the Forum."

At the Village Smithy's Forge

Credit for this enterprise is given J. B. Bryant. "For 15 years, Bryant was a blacksmith, in a community some distance away. His shop was the stamping ground for farmers. Three old chairs, boxes and nail-kegs were usually occupied by men who discussed such subjects as the weather, politics, business, religion, education, civic activities. Discussions were vigorous and direct. Sometimes they grew hot and stormy, but they never engendered hatred and strife. Bryant saw to that. His viewpoint was the balm that healed. 'Fellows,' he would say, 'it does us all good to hear the other fellow's argument. I've yet to find the man who knows it all about anything.' This philosophy of Bryant's is the germ from which the Forum movement came. He later moved to Riverside community, where he learned that rural life was lacking in human contacts; that this void was dwarfing the mental and spiritual outlook of the people; that absence of meeting places where all people could get together and hear all sides of all sorts of questions engendered misunderstandings . . . he caught the vision of the value of injecting into the social life of Riverside the open forum of his smithy days. And as he dreamed his dream, he grasped the truth that success in transforming his vision into reality depended on making the program of discussion broad enough and the range of activities wide enough to challenge the attention and merit the respect of all the people."

Free, honest discussion and a broad program stimulated the interest and enthusiasm of the citizens, who built and paid for a $6,000 community hall.

The hall has become a busy center of community activities. It early became the prototype of others throughout the country. Today there are ten active units in the county, each one of which is following the example of Riverside, and over each one of which the County Forum exercises a helpful and advisory influence.

Surface Treatment for Streets and Highways

A Portion of a Valuable Report Presented to the County Highway Officials Division of the American Road Builders' Association

CARE must be taken in selecting the type of surface treatment best suited to local conditions as regards costs, traffic, climate and subgrades. In making this selection, other conditions being equal, it should be borne in mind that the durability of the surface treatment is a function of the thickness and quality of the cover and that the bitumen acts only as a binder for the mineral aggregate.

Summary of Conclusions

1. That the use of bitumens primarily as dust preventives has not been generally satisfactory and is regarded as a temporary expedient.

2. That bituminous surface treatments are preferred over bituminous dust-layers because they have a higher residual value for continuous maintenance or stage construction purposes, and better riding qualities.

3. That the distinction between the single and dual surface treatment lies more in the general thickness of the cover than in the number of applications.

4. That practice varies, but, as a rule, tar is preferred to asphalt as a prime coat because it penetrates the subbase more deeply, does not "ball" to as great a degree as asphalt when in contact with dust, and dries more rapidly, thereby offering less inconvenience to traffic.

5. That asphalt is generally preferred for the seal coat because of the slowness of the evaporation of its lighter oil constituents, which make it retain, longer than tar, its cohesive properties for stone aggregates and waterproofing ability over the cracks in the prime coat.

6. That the heavier the bitumens, the thicker will be the mat of surface treatment and, generally, the larger will be the required diameter of the rock cover.

7. That cold applications of bitumen are growing in favor because lighter treatments may be applied and carefully controlled, and the mixture may be bladed while "curing," thus insuring a smooth-riding surface.

8. That without a prime coat there is a greater tendency for the material to "peel," owing to the lack of a bond that penetrates into the subbase beneath.

9. That because of their thin skins, single bituminous treatments are most serviceable on well-compacted macadams or heavy subbases.

10. That the character and thickness of the subbase, climate, traffic and subgrade determine the type of surface treatment necessary.

11. That surfaces bladed during construction and traffic-bound are smoother riding than roller-compacted surfaces.

12. That the stability of the treatment, other conditions being equal, depends upon the thickness and quality of the compressed rock; *the bitumen should only be considered as a binder.*

13. That the dual surface treatment as used in western Florida on lime-rock and sand-clay bases, at a cost of $2,500 per mile for a 20-foot width, provides an excellent, smooth-riding and non-skid surface which should be carefully investigated for possible extension into other regions.

14. That the riding qualities of the mixed-in-place types are claimed universally to be better than the penetration types because of the blading during construction.

15. That surface mats covered with small stone chips (¼-inch or less) have a tendency to form ridges or waves under traffic.

16. That interlocking, angular, and relatively coarse stone is required to provide internal stability in a bituminous surface.

17. That premixed bituminous surfaces permit better control of the materials than mixed-in-place surfaces and interfere less with traffic. In the state of California, with the western method, there is very little difference in the cost of the two types.

18. That substantial subbases are required in order to justify the high initial cost of rock-asphalt surfaces.

19. That the degree of hardness and toughness and the character of the surfaces of the stone cover largely determine the durability of a bituminous surface treatment. Glazed surfaces are not desirable because of lack of adhesion to the bitumen.

20. That angular rock and slag make a more stable surface treatment than rounded material such as uncrushed gravel; but crushed gravel is very satisfactory.

Single Bituminous Surface Treatment

As dust preventives, single bituminous surface treatments have not met with marked success, but are generally considered a temporary expedient. As a surface treatment, the method consists of a single application of tar or asphalt covered with coarse sand, pea gravel or stone chips, but a prime coat of bitumen is desirable, especially on the more porous and less firmly compacted bases such as sand-clay and shale.

The use of the single bituminous surface treatment is generally confined to such bases as well-compacted macadam, and to concrete. Where the more fluid cold applications are used, sand is preferable for a cover, but the hot applications require coarser material.

Without a prime coat, there is a tendency for the mat to peel from the base because of the lack of bond and the fact that the old surface is not stabilized and waterproofed to a sufficient depth. Retreatments are necessary at intervals of one, two, or three years, and in the course of time, a mat of ½-inch or more in thickness is built that may become unstable during the summer months and may be displaced into ridges by traffic. The construction costs vary from $300 to $1,000 per mile of 18-foot width, depending upon the number of applications of bitumen and the character of the cover material.

On account of the comparatively thin skin of surface treatment, the greatest service in cost per vehicle-mile is on the well-compacted macadams, and the average allowable traffic does not exceed 800 to 1,000 vehicles per day.

Dual Surface Treatment—Penetration Method

This type of surfacing is satisfactory for well-compacted, smooth surgravel, lime-rock, loose material, such as broken stone, gravel, lime rock, marl, caliche, shale and sand-clay. Construction methods vary in detail, but the general procedure, whch is similar, consists of the application of a prime coat of bitumen, with or without a light cover of mineral aggregate, followed by a second application of bitumen that is immediately covered with mineral aggregate and rolled. The prime coat penetrates, binds, and waterproofs the original surface and bonds it to the seal and cover coats. The first prime coat, covered by coarse sand if used, is usually a cold liquid tar, a cut-back asphalt, or a low-viscosity road oil. The seal coat consists of a heavier bitumen such as hot asphalt, hot tar, cold cut-back asphalt, or heavy road oil. The aggregates for the final cover range all the way from

coarse, clean sand to stone or slag chips which pass a 1½-inch and are retained on a ¼-inch screen.

The traffic which may be carried varies from 700 to 2,000 vehicles per day, depending upon the stability of the base. The maintenance costs increase with the volume of traffic, but 1,000 vehicles per day does not exceed the capacity of the dual surface treatment on a substantial base.

A brief description of the dual surface treatment, which has been so successful on lime-rock and sand-clay bases in western Florida, follows:

1. The surface of sand-clay bases is often stabilized by blading into them pea gravel (passing ½-inch screen) at the rate of 1 cubic yard to each running 50 feet of road, 20 feet wide.

2. The surfaces to be treated are carefully shaped under traffic until they are smooth and hard.

3. A prime coat of tar is applied on sand-clay at the rate of 0.2- to 0.3-gallon per square yard, and allowed to "cure" under traffic.

4. The prime coat is covered with the excess sand and gravel-broomed from the untreated surface prior to the application of the tar.

5. Breaks in the prime coat are patched with asphalt and crushed slag.

6. The prime coat is broomed clean and an asphalt seal coat is applied at the rate of 0.45-gallon per square yard.

7. The seal coat is immediately covered with crushed slag (passing a ¾-inch screen) at the rate of 45 pounds per square yard.

8. The slag cover coat is bladed and rolled and later bladed at intervals until compacted under traffic.

9. The cost of the treatment averages $2,500 a mile. An excellent non-skid and smooth-riding surface is obtained.

Mixed-in-Place Bituminous Surface Treatment—Fine Aggregate Type

This type consists of mixing in place the natural constituents of the road surface, with either a slow- or a quick-curing cold asphaltic oil or tar. The seal coat, where used, may consist of bitumen covered with coarse sand, fine gravel, or crushed stone. The construction may be accomplished in two ways: (1) By the cold application of a slow-curing oil, covered with a mixture of coarse sand or fine gravel containing some clay, or silt, or loam. This surface is mixed by dragging and compacting under traffic. No seal coat is used. (2) The sand-clay or sand-loam found in existing surfaces is mixed in place with a cut-back tar, asphalt, tar, or road oil. The materials are mixed by harrowing and blading, and final compaction is usually obtained with a power roller. A seal coat is frequently necessary. The thickness obtained by the first method may reach 1 to 4 inches by successive applications over a similar period of years, while the full depth during the original construction is accomplished by the second method.

The initial cost of the first method for a treated width of 18 feet has varied from $1,800 to $3,000; and $500 to $1,200 for an average of each succeeding year. For the second method for a treated width of 18 feet and a treated compacted depth of 3 to 4 inches, the initial cost in the southern states is $4,000 to $6,000 per mile. The traffic on a section of the first type on Long Island, N. Y., averages 2,000 vehicles per day. The type has a tendency to form ridges under traffic, which may be corrected in warm weather by blading. In South Carolina, surfaces built by the second method carry 800 to 1,200 vehicles per day with some signs of wear, which are corrected by maintenance.

Mixed-in-Place Bituminous Surfaces—Coarse Aggregate—Type I

This type of surface, better known as the western method because it originated in Oregon and was later developed extensively in California, is designed to form a well-bonded mixture of bitumen and the more or less loose material of the existing road surface, and further to bond this mixture with the compacted and untreated materials beneath. It is usually applied to gravel roads, although traffic-bound surfaces of crushed stone and slag are treated in a similar manner. For the best success, the surface should contain aggregates not greater than 1½ inches, or preferably 1 inch. The bitumen is applied in two or four light applications totaling 1.3 to 1.5 gallons per square yard for a 3-inch compacted surface. The bitumens used for the prime coats are frequently light asphaltic oils, tars, or cut-backs that are low in viscosity and high in penetrating qualities. For the final application (not the seal coat) higher-viscosity bitumens are favored. The preliminary loosening of the surface is accomplished by scarifying. The oil after application is mixed with disk or spring-tooth harrows and always with a blade grader.

The average cost of this type in California is $1,200 to $1,500 per mile for a 20-foot width width. The type is new, however, and maintenance costs over a reasonable period are not available. It is reported to be serviceable for 800 to 1,500 vehicles per day.

The riding qualities of the mixed-in-place types are universally claimed better than for penetration types because the surface is bladed with a road machine during construction.

Mixed-in-Place Bituminous Surfaces—Coarse Aggregate—Type II

This type was developed largely in Pennsylvania and is more expensive than Type I and more substantial, owing to the higher class of selected coarse aggregate. It is known as "oil-bound broken stone surface" in Pennsylvania, the "carpet treatment" in Tennessee, and quite generally by the trade name of "Retread." The principal features of the process consists of shaping and brooming the base course, priming it with a cold bitumen, followed by the application and mixing with a blade grader or drag of more bitumen with a clean, crushed, coarse aggregate up to 1½ to 3 inches, depending upon the depth of surfacing, and then compacting the material under a roller and traffic.

In Tennessee, where the crushed stone all passes a 1¼-inch screen and the thickness of the surface is 1 to 1½ inches, the traffic ranges from 400 to 1,000 vehicles per day, including several bus lines. Under traffic, this type kneads into a "closed" surface that resembles bituminous macadam. On account of the blading during construction, the riding qualities are excellent and, because of the coarse chips or stone on the surface, this type does not become slippery in wet weather. The large stone provides internal stability, and the surface is not easily pushed into ridges under traffic. The cost in Tennessee is $2,000 per mile for an 18-foot width and 1-inch depth. In Pennsylvania the cost averages $2,500 per mile, 16 feet wide and 2 inches deep.

Premixed Bituminous Surfaces—Laid Cold

With the exception of some patented products such as made by American Tar Products, The Barrett Co., and Amiesite, this type of construction is new. This surfacing is primarily an intimate mixture of aggregates and bitumen, mixed hot or cold, but the resultant mixture must be such that it can be laid at normal atmospheric temperatures. There are two general types: (1) the coarse, and (2) the fine aggregate. Amiesite is the oldest representative of the coarse type. The bitumen is a cut-back tar or asphalt. Hot asphaltic cement and a liquefier are used in the Amiesite mixture. The fine aggregate type is intended to be similar in characteristics to hot-mix sheet asphalt. The bitumens used are asphaltic cements and flux.

The materials for both types are mixed in a standard concrete mixer, or pugmill, or by hand. The aggregates should be clean and dry and the consistency of the bitumen determined where heating is necessary. If the bitumens contain volatile oil, a sufficient

time must elapse, after mixing, for them to evaporate—three or four days are usually sufficient. Many of these mixtures may be stored for months before use.

The construction methods consist of dumping, spreading, and rolling like asphaltic concrete. With present methods, the riding qualities are not so good as the bladed types. The construction costs for an 18-foot width vary from $7,000 to $12,000 per mile or more.

Premixed Bituminous Surfaces—Laid Hot

These surfaces are represented by the well-known plant-mixed sheet asphalt, asphaltic concrete, bituminous concrete, and by modified surfaces such as the sand asphalt of North Carolina and Florida. The bituminous concrete of Massachusetts has a light squeegee coat of bitumen applied to the top course and covered with "pea" stone. It is laid on a prepared subgrade, preferably of well-compacted macadam, or gravel, or concrete. It is dumped, spread by hand or machine, and rolled to compaction. The construction costs for an 18-foot surface vary according to the design and depth, from $10,000 to $25,000 per mile.

Natural Rock Asphalt

The base should be substantial to warrant the expenditure necessary for this type of surfacing. The work consists of first treating or priming the base course with asphaltic oil or tar. This is allowed to penetrate and is then covered with a loose layer of natural rock asphalt laid at atmospheric temperature and rolled with a power roller so that the compacted thickness is ½ to 1½ inches. A light seal coat, which is a meal or fine mixture of natural rock asphalt, is then rolled in. The best known of this type are the Uvalde, an impregnated limestone quarried near San Antonio, Texas; Kyrock, a Kentucky sandstone impregnated with bitumen; and the Alabama impregnated limestone. The material is crushed to pass a ¼- to ¾-inch screen, and usually a bituminous flux is added to soften the natural asphalt or increase the asphaltic content.

These surfaces are reported to be satisfactory for from 1,000 to 2,000 vehicles per day, and the initial cost varies from $3,500 to $6,500 or more for an 18-foot width.

Bituminous Macadam—Hot Application

This is the New England bituminous penetration macadam which has been used for about fifteen years. The aggregate is generally crushed stone, and the bitumen is hot asphalt. The three principal operations are:

(1) Spreading and rolling a layer of coarse stone on a compacted base. The voids are then partially filled with bitumen.

(2) Spreading and rolling a layer of key stone just large enough to fill the voids in the coarse stone.

(3) A light application of bitumen followed by a cover of stone chips for a seal coat, and compacting with a roller.

The stone is usually ¼-inch less in size than the compacted thickness of the surface. The bitumen required averages about one gallon (or slightly less) per inch depth of finished thickness. The thickness varies from 2½ to 3 inches and costs for an 18-foot width from $9,000 to $17,000 per mile.

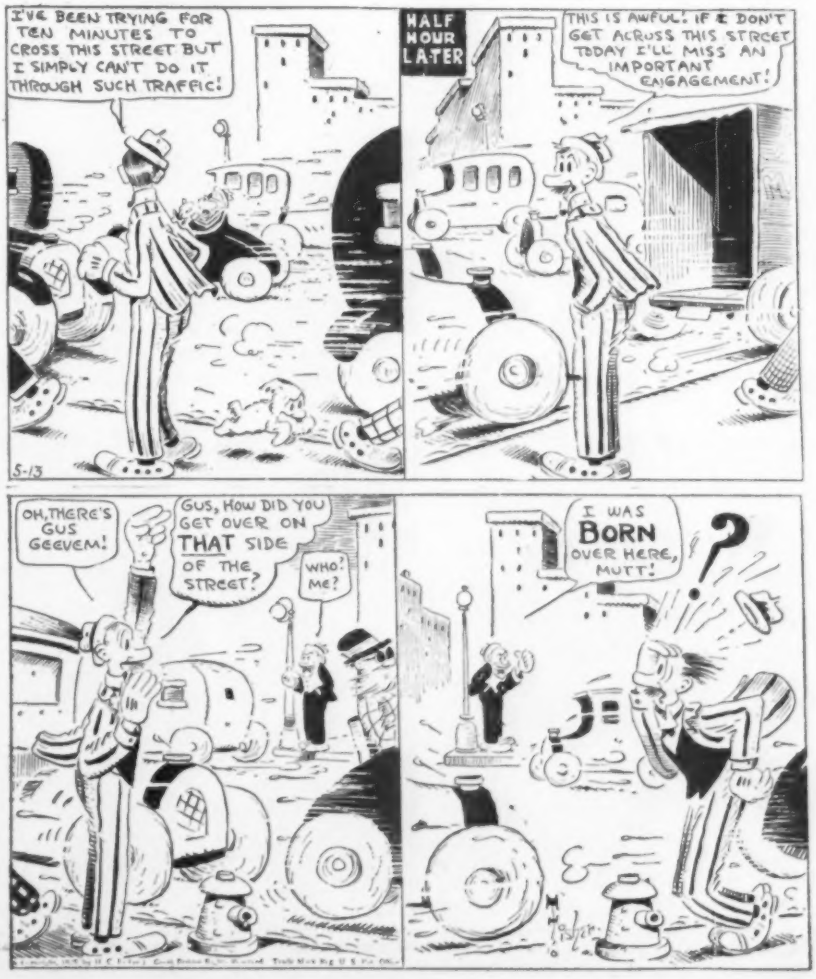
The surface is smooth-riding and non-skid and will carry economically from 1,000 to 2,000, and frequently more, vehicles per day. The capacity for motor trucks depends upon the strength of the foundations or subbase.

Modified or "Puddle" Bituminous Macadam—Cold Application

In general, the surface course is constructed in the same manner as a water-bound macadam, except that cold bitumen is used for "puddling" instead of water. A seal coat is usually advisable. In West Virginia it is known as "modified bituminous macadam," and in Virginia as "cold bituminous bound macadam." Cold or hot bitumens are used for the seal coat. The object is to build a macadam surface which requires a smaller amount of bitumen for a given depth of surface than is used for bituminous macadam. In West Virginia, using soft sandstone as an aggregate, the average cost for a 3¾-inch depth, 18 feet wide, is $7,500 per mile. The daily average traffic on soft sandstone is 500 to 800 vehicles per day. Harder stone should show a greater capacity for traffic.

The Wisdom of Selecting a Suitable Permanent Home to Be Born In

MUTT AND JEFF—The Traffic Problem Is Every Man's Birthright


I'VE BEEN TRYING FOR TEN MINUTES TO CROSS THIS STREET BUT I SIMPLY CAN'T DO IT THROUGH SUCH TRAFFIC!
HALF HOUR LATER
THIS IS AWFUL! IF I DON'T GET ACROSS THIS STREET TODAY I'LL MISS AN IMPORTANT ENGAGEMENT!
5-13
OH, THERE'S GUS GEEVEM!
GUS, HOW DID YOU GET OVER ON THAT SIDE OF THE STREET?
WHO? ME?
I WAS BORN OVER HERE, MUTT!
?

A TYPICAL STREET PLAYGROUND SCENE
Scores of active games have been devised in Philadelphia for such areas. A number are in progress there

Happiness Summer

Something for Every Child to Do

LAST year Happiness Week was celebrated in Philadelphia at the height of the outdoor play season. Its chief feature was the installation of street showers at the rate of from forty to fifty per day. Every shower was placed in a part of the city not easily accessible to regular playgrounds and otherwise short on hot-weather attractions for youngsters. At the end of the week, over 300 of these appliances, popularly referred to as "Kiddie Cooling Stations," were in use. Everybody had a glorious time except the Public Works Department. This municipal unit alone was permitted to turn on and off the fire-hydrants to which the showers were attached; it is limited to the use of its officially owned property in the conduct of its officially appointed duties; and it neither owned, nor on short notice could buy, enough wrenches to meet the requirements of the occasion.

"But, Gee! Every week was Happiness Week for some of us kids!" one youngster interviewed by a news reporter declared with gusto at the end of the season. The Playgrounds Association of Philadelphia had indeed regarded the shower operation as but one feature of an aggressive summer-long campaign of play and recreation, in the conduct of which it had the cooperation of the municipality, the Chamber of Commerce, and many other agencies. Its objective was: "Something to do every day for every youngster, so that none need be exposed to the dangers and evils of loitering on the streets, or in even less safe and desirable places."

Everybody Assisted

A volunteer body of 1,000 workers, with the aid of the police, devoted its attention to attracting children to organized, supervised play centers where each one was given incentive to join in the active play programs. Children too small to make the trip to and from the nearest playground alone, and whose parents could not conveniently bring them and call for them, were conducted back and forth daily by volunteers.

The four Recreation Organizations of the city had in operation 141 centers, 25 of which were opened in 1929 for the first time, and a number of which occupied areas in the city's parks not hitherto available as playgrounds. (Action of Mayor Mackey made this possible.) Three new play streets were opened, and a number of vacant lots were "converted" by the Playgrounds Association in its vast pooling of assets for provision of what was perhaps an unprecedented public recreation program by a non-municipal agency.

Thirty-one different projects were scheduled, including Wagon, Skooter, and Roller-Skate Tournaments; Play Days; Lantern Fêtes; Doll Shows; Pet Shows; Mardi Gras and programs by costumed story tellers. A special group of games was developed to meet the conditions of play streets. Milk and crackers were served free at some centers, for health's sake. For safety's sake, all children were given opportunity to join the Safety League, in which they took a pledge to avoid the dangers of careless use of the streets.

Everybody Participated

Special events followed each other rapidly throughout the season; blood-tingling, laughter-provoking events. During one week alone there were three Mardi Gras celebrations, five Doorstep Checker Tournaments, and Beetle Hunts on eight playgrounds with a Beetle Circus as a grand finale. Visualize the Patterson Street Mardi Gras, with 2,000 men, women, and children gathered for the length of one city block, talking, laughing, shouting; most of them poorly clad; few of them speaking English, for

DEVELOPMENT OF A MODEL TOWN
Please note the absorption of the builders of railroad station, fire house, church and garage, and the pleasant environment suggested by the painted backdrops

OPPONENTS IN BOX HOCKEY
This is one of the most popular of games devised by the Association to meet the limitations of play on some of the narrow streets in Philadelphia

in Philadelphia, Pa.

Somewhere for Every Child to Play

ONE OF THE 500 SHOWERS
This equipment, including closed street sign, was provided through subscription funds, at $15

this is one of the poorest sections of the city and its population is 100 per cent Italian. Everyone proudfully waits for the parade to begin—for the Mardi Gras *is* a parade—a parade all on wheels. Anything on wheels is eligible; the more the merrier; and every crowding, shoving, laughing member of the company has somebody in it.

Suddenly the whistle blows. The crowd is backed to the sidewalks and held there by junior police and volunteer parents. The street is clear except for the judges' seats. Amid intense excitement the parade comes on—floats, carriages, bicycles, express wagons, kiddie cars, skooters. First in line is a youthful epitome of Gene Tunney, in a mounted prize ring. Next, a tot in a miniature airplane—*Carlo Lindbergo,* and so on and so on, all eager for place and prize. There are three ribbons for each division —red, white, and blue. Spectators await the awards as keenly as participants. *Americans all!*

All Had Fun But the Beetles

The Japanese beetle sports events were held on eight playgrounds over a four-and-a-half-day period, and were planned with the combined purpose of using youthful energy in warring on a common pest and of teaching the children, en masse, the joy of participation in an enterprise for the community's good. The fun of the hunt and the incentive provided by the silver loving cups offered as awards combined to yield a game bag of 283,851 beetles, with a little Patterson Street girl bringing in 20,000. Following the hunts, a Beetle Circus was staged at Friends' Select Playground, and was a huge success. The beetle trainers put their exhibits through amazing feats of strength and skill. Some lay on their backs, on command balancing matches on their eight upturned feet; some waved dumbbells made of matches and cork; some did handsprings and performed jiu-jitsu stunts. As they came off-stage, they were put in great glass jars with their fellow-captives, and put on display. So fares the enemy of green grass and bright flowers in the parks!

Tot-Lots

As the summer progressed, the program was illuminated by bursts of inspiration on the part of those whose efforts kept it going. One such resulted in the opening of the city's first Tot-Lot. "What's a Tot-Lot?" everyone asked bewildered, and was informed that it is a synonym for care-free mothers, happy babies, and safety for all. A Tot-Lot is an area enclosed by a high fence and adjacent dwellings, and provided with all sorts of small-child play apparatus such as sand-boxes and swings and Jungle-gyms, and with a toilet and showers. Its most captivating feature is its entrance. No child too tall to walk under the top bar of this aperture (only 4 feet) without stooping is eligible inside by any manner of means, this being an exclusive little-child haven.

The first Tot-Lot was opened by the Playgrounds Association in the heart of a community where there are 500 youngsters who had had no other place for an airing than the hot streets.

"There should be one in every congested ward," declared Charles H. English, Executive Director of the Association, who describes the genesis of this one in a way to make other recreation executives go Tot-Lot hunting when they find Dog Days approaching with the nowhere-to-play matter still unsettled in their congested areas, and the high infant-mortality season just round the corner.

"While poking around the lower end of Callowhill and Vine Streets to find places where the Association story tell-

CLIMAX OF A STORY-TELLING HOUR
The orange crate seats were the idea of one of the playground children. Story-tellers go from playground to playground, often in costume

THE BEETLE CIRCUS
Owing to the clamor for front-row places at this entertainment, the "stunts" had to be repeated many times on one summer afternoon

THE TOT LOT "BEFORE"
Buried in garbage—unsanitary; a promising place for mosquitoes and disease to breed

—IN THE MEANTIME
Big brothers doing their bit after the Association had cleaned off the area

ers could safely assemble children without fear of traffic, I looked down an alley or court on Newmarket Street, near Second. There was a fence with a board out at the dead end. I looked between the boards, and there, buried by garbage, decayed produce, filthy articles of all kinds, mosquito-breeding pools and refuse of 40 years' standing, I saw what is now Philadelphia's first Tot-Lot. We obtained the permission of the owners to clear this area of 80 by 110 feet."

Many other Philadelphia communities began to take notice that the usual recreation centers are designed particularly to meet requirements of the older children; that babies cannot engage satisfactorily in their little enterprises where boys are playing ball, and girls jumping rope; and that, fortunately, the discrepancy is one less expensive to meet than the most. Welfare experts are beginning to suggest that the city hunt up the worst eyesore in the way of a vacant lot in each ward and turn it into a place of carefree and happy self-expression for youngest citizens.

This record began with 300 street showers going full-play. The organized effort which materialized these showers, and made them a permanent summer possession of Philadelphia children, is worth reviewing. *The Philadelphia Inquirer* cooperated with the Playgrounds Association, and Mayor Mackey gave the movement his official endorsement and provided that all the resources of the city, particularly the essential ones of Police, Fire and Water Bureaus, and Welfare Department, should be turned to making the showers effective. The Playgrounds Association found that it could provide and install the shower equipment on fire-hydrants (complete including street barricades) at a cost of $15 per shower. Through the columns of the *Inquirer*, citizens were interested in contributing to the "modest but immensely effective" enterprise, and a great deal of publicity was given the whole project in all the newspapers, resulting in a keen public interest. The project, now that it has been completely organized, has been turned over by the Playgrounds Association to the Department of Public Welfare, under which it will be operated on a permanent seasonal basis.

This summer the whole program will be repeated on an enlarged scale, with two additional costumed story tellers in the court tenement district; with additional street showers; and with an addition of six distinct new projects, making thirty-seven in all. Greatly increased attendance is expected. Plans are being made for a playground Houdini—a young Hindu who will appear in native costume, on regular schedule, giving first a show, and then a lesson in elementary magic. At the end of the summer, a playground Houdini night is planned. This is expected to be popular, since children like nothing so much as to mystify and be mystified.

—AND AFTERWARDS
A big brothers' and sisters' celebration when the ground was ready for the opening

OUTSIDE LOOKING IN
The little Tow-Head in the waiting line may not get in. No one is admitted who cannot go under without stooping

Efficiency in Municipal Purchasing with Minimum Annoyance to Manufacturers and Dealers

By PAUL V. BETTERS

INSTITUTE FOR GOVERNMENT RESEARCH

THERE is every reason for assuming that the relations between the buyer and the seller should result in distinct benefits to both parties. This is especially important in cases where the annual volume of business transacted runs into large numbers. Yet at the present time the trade relations of many of our municipalities to vendors—be they manufacturer or retailer—are often unsatisfactory, and particularly so with respect to the vendor. It is not an uncommon experience to find particular business houses declining and openly avoiding any possibility of transacting business with these governmental units. On the other hand, not long ago the writer was shown by the Comptroller of one of our large eastern cities a letter from a nationally known firm which stated that "it was always a matter of pleasure to sell goods to the city of ———."

What are the factors which contribute to this first unsatisfactory situation and what steps should be utilized in bringing about a change? Secondly, what are the practices used in the "city of ———" which reacted so favorably on the particular firm to which reference has been made? The object of this brief paper is to answer these two questions.

One important factor in governmental purchasing must be borne in mind in a discussion of this problem. Governmental units without exception have lagged behind private business and enterprise in the establishment of modern progressive practices and techniques. There are several reasons for this. Perhaps the most important is that public officials, and in this connection public buying officials, have been so restricted and limited in their range of activities by statutory provisions that they have been unable to function effectively. L. F. Boffey, editor of *The Purchasing Agent*, has stated this situation as follows:

"It is natural that governmental purchasing should lag far behind industrial buying in efficiency. Industry *must* get reasonable value for its expenditures; government can be—and frequently is—indifferent on this point, except to casually observe some free-and-easy regulations which are supposed to encourage legitimate competition for government business. In truth, much of the ingenuity in present-day governmental purchasing appears to be devoted to finding ways to evade such regulations without technically violating the law."*

This fact must be emphasized in any analysis of the problem.

It has been estimated that the total expenditure of all governments, national, state, and local, within the United States for the year 1926 was $11,627,000,000, or a per capita of more than $99. Excluding the amount expended for personal services (estimated at $4,000,000,000) it would appear that in our industrial and economic life the Government in its various jurisdictions is one of our best buyers. Chief among the governmental units as a market for the products of industry are the municipalities, and it is to them particularly that our attention is directed. In fact, the yearly budget of New York City alone amounts to approximately one-seventh of the national budget. In addition, past experience has indicated that the functions of government are constantly being enlarged rather than limited, so that business finds an increasing demand for supplies, materials, and equipment from this particular buyer. How to purchase this vast amount (in dollars) of goods economically in order that the tax rate may be stabilized, is the problem facing municipalities today. The improvement of business relations would do much in effecting such stabilization.

* In an address delivered before the Governmental Group of the National Association of Purchasing Agents, at Buffalo, N. Y., June 3, 1929.

The Author's Conclusions in Brief

Cooperation and confidence between the municipality as a buyer and the business man as a seller is a fundamental factor in municipal purchasing. It may be stated that business relations should be improved in those cases where neither the purchaser nor the vendor is on a basis that leaves both parties satisfied with the completed transaction. The duty confronting cities is to follow in the footsteps of those municipalities which have established sound methods and practices of buying. In an up-to-date system, dealers would compete for the business of each community upon sound ethical regulations. Unfair and partisan awards, delayed payment, limited advertisement, trade mark buying and small quantity buying should be eliminated in so far as it is practicable.

Centralization

While purchasing is one of the major functions of management, municipalities have been slow in developing purchasing organization or procedure along scientific lines. As is well known, centralization is a recognized principle in the divisions of a private business. A survey of public purchasing agencies made in 1926 by Russell Forbes indicated that a large number of municipalities had established central buying bodies. But while complete centralization of the functions of purchasing is intended by many city charters and ordinances, the actual administration of purchasing is not always centralized in one buying department or office. As a result, the business man is forced to deal with several and, in some cities, hundreds of separate departments of the city, whereas in contracting with a corporation the vendor is concerned with but a single buying agency. Even where purchases for the city are centralized, emergency buying by departments frequently makes for a breakdown of the system. It was found, for instance, in 1928 that approximately 30 to 40 per cent of the requisitions coming in to the Los Angeles County purchasing office were emergency requisitions and the number was constantly increasing. Almost every purchasing agent will testify that buying by departments under the plea of an emergency is one of the practices most difficult to curb. Until it is curbed, however, it cannot be said that centralization of buying is a fact in many of our cities.†

Where purchasing is not centralized, there are numerous

† Illustrative of this point, see Report of the City Contract Committee on the Contract System of the City of Philadelphia, p. 44. 1929.

sources of annoyance to the dealers endeavoring to trade with the city, such as "necessity of calling at widely separated places to examine specifications and samples, and the formalities involved in filing bids, in making security deposits, in securing prompt payment of bills." All these could be materially reduced by a single purchasing agency and competition for the city's business increased. Under a centralized plan the dealer's work would be immensely simplified as a result of the decrease in the number of orders and purchases, in the number of accounts on his books, and in the simplification of delivery conditions.

To go even further, we note an extremely complex situation in respect to metropolitan areas. In the Chicago region there are approximately 4,000,000 people who are bound closely in a social and economic unity, but "without any semblance of political unity. This region embraces not only 1,700 different municipal governments but extends into 4 states and over 16 counties. There are 202 cities, 166 townships, 183 park districts, 10 sanitary districts, 183 drainage districts, and 1,000 miscellaneous districts in the same area." If the purchases of these different units could be combined and coordinated, the falling tax rate in this region would thump the bottom out of the tax levy thermometer. Facts are not at hand to indicate the actual number of separate public buying agencies in this region, but a conservative estimate has placed the number at 3,000. What is true of Chicago likewise holds for other regional areas such as Cleveland, Pittsburgh, and St. Louis. The Citizens League of Cleveland pointed out recently in vivid fashion the present situation as follows:

"This is known as the great age of mergers—banks, railroads, mercantile houses, power companies, and agricultural forces —everywhere they are consolidating their separate units in the interest of greater economy and increased efficiency.

"The smaller banks in the city and suburbs are being absorbed and made branches of the central banks. The $2,000,000,000 banking corporation is no longer a mere dream. It is a reality.

"The separate power units are being absorbed by the great interstate corporations and their power lines are spreading out in every direction.

"The big railroad corporations are gradually consolidating the individual railway lines into a few transcontinental systems with their tentacles stretching out in every direction and feeding into the main line.

"Even the farmers are beginning to consolidate their producing and marketing systems in the interest of increased profits.

"But in contrast, the directly opposite movement is going on rapidly in local urban government. Disintegration, instead of consolidation, is the trend. More and more, local political subdivisions are being set up to perform the community services. Ten years ago Cuyahoga contained 92, while today there are 103 separate taxing units. The same tendency is seen in practically every metropolitan center in the country. The question of regional government is the paramount issue in our larger cities."

The present state of affairs needs revising from practically all administrative viewpoints. As it stands, there is no integrated organization with respect to public buying.

Payments

When manufacturers, wholesalers, or retailers transact business with private concerns, they are usually certain of payment at a definite time. Invariably, when dealing with municipalities they realize that a considerable amount of time must elapse (anywhere from two months to two years) before payment is tendered. Usually this thoroughly unbusinesslike practice can be traced to two sources—(1) legal provisions, or (2) inefficient methods and laxity. The prevailing statutes relate to several different phases of the payment procedure: they may restrict the payment of the claim for a certain number of days; they may force the dealer to swear upon a special claim blank; or, lastly, they may require the vendor to call for his check at a specified place. Under these conditions, invariably, a poor public-relations spirit is found between the city and the business men who are the sellers. In other cases the municipalities are simply lax in meeting payments and do not make attempts to secure cash discounts which would represent a concrete saving to the city. The fact that the Milwaukee purchasing department has been able to pay for all its costs of administration by taking advantage of discounts should point the way to other public officials.

Under these conditions it is but natural that dealers are hesitant to market their goods, especially when payment may extend over a long period. The survey of purchasing in the borough of Queens, conducted by Russell Forbes in January, 1929, showed that the borough "owed contractors $830,133.37 for supplies, materials and equipment furnished in past years. Some of these claims were outstanding since 1924." The borough owed one firm over $100,000 for gasoline delivered in previous years. On December 31, 1928, the city of Chicago allowed unpaid bills to accumulate to the extent of $11,111,000. * A survey of Charleston, S. C., made in 1923 by the New York Bureau of Municipal Research, revealed that there was an average of 64 elapsed days from the date of the claim to the date of payment. If this expensive and inefficient fiscal arrangement which is current in many communities were eliminated, both the vendor and the city would benefit—the city through lower prices as a result of competition on the part of the vendors, and the dealer through non-tie-up of valuable capital.

It is safe to assume that the business men whose credit is tied up in these instances will be careful about future transactions. Private business would cast aside such red tape restrictions as are found in city governments immediately, but as long as they continue to exist, friendly relations between the buyer for the city and the business man who sells will be strained. It is a myth to believe that responsible business men will wish to continue commercial relations with purchasers who do not have a high trading reputation. A high trading reputation means, above all other attributes, prompt payment for merchandise delivered.

Sources of Supply

The building-up of dependable sources of supply is one of the essential duties of a sound purchasing organization. In this respect governmental bodies have not kept pace with private business. Most common of the methods used to inform suppliers of contemplated purchases is the statutory newspaper notice. Instead of using this device merely to fulfill the provisions of the law, cities in general depend upon it as their chief method in transacting business. It is very doubtful that the newspaper notice fulfills its intended purpose; as Russell Forbes in his recent book, "Governmental Purchasing," has stated:

"They are seldom seen and read by those to whom they are addressed, except by those few suppliers who employ press clipping services to furnish them with all public advertisements. Experience has shown that newspaper advertisement arouses very little competition."

The wide-awake municipal purchasing departments utilize far more effective mediums, such as direct inquiries, invitations to bid, and definite buying schedules. Under such a system, business men would not have a legitimate criticism, as they would be directly informed if they were prospective sellers. The work of the manufacturer, wholesaler, or local dealer would be greatly simplified if cities used effective soliciting devices. The municipality would benefit directly also as a result of lowered municipal costs made possible by the keen competition aroused under such a system of acquainting prospective sellers.

Perhaps the strongest factor exerting a detrimental influence upon the attitude of vendors in general is the fact that "closed competition" is found in a large number of municipalities. It may be that such a situation is a necessary evil of our partisan system of govern-

* George O. Fairweather: "Equalizing the Tax Burden." p. 3. An address at the National Conference on Improving Government, Chicago, November 14, 1928.

ment. A study of the Kansas City, Mo., Purchasing Department, made in 1929 by the Kansas City Public Service Institute, revealed that "many reliable suppliers do not bid on the city's needs because experience has taught them that they cannot compete with the favored buyer." An analysis of the unusually large number of contracting scandals which have occupied the front pages of the press for the last few years would seem to indicate that competition is usually based more on political than on economic factors. Where dealers are discriminated against because of opposite political affiliations or because they happen to reside in another city or part of the state, the relations are naturally unsatisfactory.

The philosophy underlying municipal purchasing that "it pays to buy at home" should not be carried too far. It is apparent that if the city must pay 10 or 15 per cent more at home, it is buying uneconomically. One of the best-governed cities in the East purchases on the following rule: it attempts to buy at home, but if the local price exceeds by 5 per cent the outside price, it purchases outside the city. That is a sound policy. Under this method local dealers will have every opportunity to secure the business of the city. While this general rule cannot be applied universally, because of peculiar local conditions in various municipalities, it appears to be of value to the administrative officials. In the long run the taxpayers will be more concerned in keeping down the costs of government than in subsidizing one or two local industries unable to withstand competition. Private enterprise would fall by the wayside if it followed the practice of many municipalities in this respect. The setting-up of artificial trade barriers and hurdles by public officials which keep out respectable and responsible suppliers is certain to result in concrete disadvantages to the community as a unit.

Trademark Buying

Trademark buying by cities has eliminated much possibility for securing interest on the part of a large group of vendors. Instead of reducing the commodity to a common basis by the adoption of standard specifications, local governmental units have been content to purchase by trademark or in general terms. This means, of course, that competing sellers are rankly discriminated against, for several firms may produce the exact article although the article is known by a different terminology. There is every reason as far as economy is concerned for the adoption of standard specifications. As one writer on purchasing has said:

"Adequate specifications insure that the user, buyer, and seller all have a common understanding of what is to be furnished; that all competitors are on an even basis from the start of negotiations; that the reputable bidder is protected against unfair or inferior competition; that the material furnished under the specifications will be ideal, from both commercial and engineering viewpoints, for the purpose for which it is bought; that inspection will be neither too severe nor too casual, but will be based on determining that the material delivered is what is specified."*

Lack of standardization can be traced to the fact that departmental officials are allowed to dictate the exact make, type or brand of commodity which they desire. Consequently, a standardization program would effect substantial savings to the city in addition to providing a means for increased competition. The Federal Government has emphasized its need for standard specifications by establishing the Federal Specifications Board. It is noteworthy that this board already has formulated a great number of specifications that are applicable to the usual goods purchased by municipalities. By adopting and fitting these to local conditions, cities could effect a great forward step in the administration of purchasing. As stated by the Kansas City Public Service Institute, lack of standard specifications has the following effects:

1. It puts bidders on an unequal footing.
2. It enables the purchaser to select the samples of the favored bidder as being the most suitable.
3. It encourages unethical business practices and grafting on the city.

The immense value which establishment of standard specifications would have upon the relations between business and government and upon the attitude of business men would be difficult to estimate.

* Thomas, "Principles of Government Purchasing."

Small Quantity Buying

Lastly, merchants avoid transacting business with a considerable number of cities because municipalities purchase in "dribs and drabs." Instead of consolidating purchase requirements into quantity orders, many of these units content themselves with hand-to-mouth buying. Because the delivery cost usually wipes out any anticipated profit, the large firm is uninterested, and its attitude is fundamentally sound. In Toledo in 1928 it was found that the amount involved in many orders in 1928 was less than the *cost* paid for the routine work of placing the order ($2.84). A conservative estimate for one of the large New York cities in 1928 stated that fully 50 per cent of all orders placed was for $25 or less. Establishment of stores has enabled some of the progressive units to buy in large quantities with a consequent saving. Business has realized that quantity purchasing (and quantity production) results in lowered costs, and until municipalities accept this position costs of government will not decrease. The situation could be partially eliminated by contracting for a large quantity with deliveries as needed. Vendors would then strive to procure the whole volume of the city's business for a particular commodity. Competition depends to a large degree upon what is at stake, and the city is bound to profit under this method of buying. Merchants who now feel that it is unprofitable to accept the public's business on this small scale will enter the field.

The Higher Advertising

I thought I saw a comet
Career athwart the blue,
I hurried on across the lawn
To get a nearer view.

It swept beyond the treetops,
Up yonder in the skies,
It ranged ahead and then I read
In glowing lights:
PIKE'S PIES.

I thought I heard an angel
Address me from aloft,
Although I own its speaking tone
Was anything but soft.
In accents that re-echoed
Among the very stars,
It seemed to cry as it passed by
WHY NOT SMOKE RANK'S CIGARS?

I saw a purple shadow
Across the Milky Way,
Then words flashed forth from South to North
In orderly array.

I gazed upon the marvel
With wonder stricken dumb,
And what I saw with trembling awe
Was:
CHEW TRICK CHICLE GUM!

JAMES J. MONTAGUE.

How Milwaukee Is Improving Its Housing Conditions

By DANIEL W. HOAN
MAYOR, MILWAUKEE, WIS.

BY promoting and financing a co-operative housing project, by developing newly annexed districts, and by systematically razing old and insanitary buildings, Milwaukee in a large measure is coping with the housing problem. By refusing to allow tampering with the zoning laws, which prohibit excessive numbers of apartments over stores, we are preventing the future development of undesirable tenement districts.

In 1920, because of the war-time let-up in annexation and building operations, Milwaukee was the most densely populated city in the country. The acute housing shortage was threatening to develop slum conditions, breeding places for disease and crime.

The Garden Homes Project

Among other relief measures, the Garden Homes project was launched in 1922 to provide inexpensive homes on the outskirts of the city for people of moderate incomes on very convenient terms. A non-profit housing corporation was formed, with the partial aid of city and county funds, which acquired a large tract of vacant land outside the city and built 105 fine, moderately priced dwellings. These buildings were sold promptly under an agreement whereby the purchaser could only sell back to the company at the original price, the title to remain in the name of the Garden Homes Company until fully paid. Payments were made in regular monthly installments. Subsequently the whole district was annexed to Milwaukee, all city improvements were installed and available property landscaped. This was the first semi-municipal housing project ever undertaken in this country and it proved very successful.

By a systematic annexation campaign, Milwaukee has succeeded in annexing, since 1922, sixteen square miles of outlying territory and induced people to move out of crowded tenements and dilapidated dwellings into new districts, where land was comparatively cheap and living conditions more wholesome. As a result, thousands of new homes were built under modernized zoning and building restrictions, forming beautiful new residential districts, adding 150 million dollars to the assessed valuation of the city, and providing employment for thousands of workers.

Condemnation of Insanitary Buildings

However, the existence of many old, dilapidated and insanitary buildings unfit for human habitation still remained a problem. The hold-over Building Inspector was unwilling to act. Finally, we succeeded in ousting him and I appointed in his place Leon M. Gurda, a well-trained, resourceful and experienced architect. Mr. Gurda immediately proceeded to use his authority to raze these unsightly and dangerous buildings, not by condemning whole blocks at a time, but by singling out structures in various parts of the city, thus avoiding publicity and organized opposition. In 1928, 400 such structures were razed, in 1929, 261, and in 1930 to May 1, 139, making a total of 800 buildings destroyed. The work of razing was done either by the owners themselves, or by the Building Inspector's office. Each case was so thoroughly prepared that every contested condemnation was upheld by the courts, principally on the more easily provable grounds that the buildings were insanitary and unfit for human habitation, rather than because they were structurally unsafe.

The procedure is as follows: Inspectors throughout the city report any buildings in their districts which they consider dangerous, insanitary or unfit for human habitation. These reports are then investigated by the man in charge of condemnations. He makes a careful inspection in each instance, determines whether the building can be repaired and converted to other use, gathers all the necessary data, takes photographs and prepares a complete record of the case. If condemnation is necessary, the Building Inspector notifies the owner to tear down the building within a prescribed time, and in the event of his failure to do so, the Building Inspector proceeds to raze it on his own authority and assesses the cost to the owner. A residence under condemnation can be converted to other uses, but if zoning or building code provisions prohibit the use of a building for other than residential purposes, the owner is compelled to take it down. If the owner prefers to repair the building, permission is granted only if the deterioration does not exceed 50 per cent of the value. In such cases estimates of cost of such repairs are required, and in most instances the Building Inspector has been able to convince the owners that the cost would exceed the rental returns for several years and that it would be cheaper to have the building razed. Co-operation is an important factor in this work, and most property owners are willing to listen to reason.

Fireproof—Except the Roof

SEVERAL serious fire losses have occurred recently in so-called 'fireproof" buildings—"fireproof except the roof," as they are generally known. Architects in many cities have designed buildings to which floors can be added as the need develops. The foundations may be strong enough to carry a twelve-story building, but only seven stories are erected. A "temporary," and usually combustible, roof is added and may remain for ten years before the building is completed. In the meantime this condition creates a distinct fire hazard.

Emphasizing this fact, the National Board of Fire Underwriters calls attention to a recent fire in the Breslin Building, Louisville, Ky., as a case in point, and quotes the report of an engineer who inspected this building after the fire. Recommending that precautions be taken to prevent similar occurrences in future, the report says:

"This can best be accomplished by providing incombustible fire stops and extending all shafts to a height of 18 feet above the temporary roof. The ceiling of the top story should be made watertight by carefully filling in the space around all pipes, and scuppers should be provided for drainage. It would also seem desirable to ask, in addition to the above, that the roof be protected on the underside by a manually operated (open head) sprinkler system, with control valves for each section conveniently located on the top floor.

"The Building Code should be revised to prohibit the construction of combustible roofs on buildings of this type. The code should also require that high voltage signaling system wires be installed in a safe manner."

Midnight in the City

By IMOGEN B. OAKLEY

The hush of midnight
Falls upon the city. It is broken only
By trolley cars,
Rushing through the streets, clanging bells and pounding over rails at crossings;
By giant trucks,
Laden with produce, thundering on their way to the wharves, leaving in their wake
A piteous wreckage
Of wakened children and wan-eyed sufferers for sleep;
By automobiles,
With muffler cut-outs open wide, chugging below bedroom windows,
Or speeding murderously with shrill insistent horns;
By motorcycles,
Cracking, snapping, exploding, on their nerve-destroying way;
By whistles from the river,
Signals, so it is said, from boatmen to their best girls on shore.
The whole world loves a lover, but it would love him more
If he would woo with less of siren and steam whistle.
By street venders,
Shouting inarticulately one knows not what,
Nor cares to know;
By revelers returning from the movies,
Chanting lustily the latest ragtime favorite;
By jazz in the back street,
Where the proud possessor of a new radio
Hospitably opens doors and windows that all may hear,
Heedless, alas! that where all may hear, all must;
By the cock next door
That "with his lofty and shrill-sounding throat awakes the morn"
And begins his wakening task when first tomorrow glides into today;
By embattled cats,
Yowling mutual defiance on alley fences;
By resentful dogs,
Baying the electric lights and voicing their discontent
With the narrow confines of their backyard prisons.
Their owners could take them indoors
And allay the sufferings of their sleepless neighbors.
But that man lives not,
Nor woman,
Who believes his own dog can be a nuisance.
And thus, with rush of trolley and roar of train,
With clang of bells and blaring horns,
With shouts and calls and ragtime songs,
The hush
of midnight
falls upon
the city.

Poem by courtesy of the Philadelphia Public Ledger; drawing by C. D. Batchelor for THE AMERICAN CITY.

Municipal Responsibility for Safe Sidewalks

By JOHN E. ZOLD

A MUNICIPALITY is legally obligated to keep its sidewalks in reasonably safe condition where it knows of defects in time either to repair them or to give warning of their existence.

This general rule of law was reiterated recently by Judge R. C. Bell of the Georgia judiciary in one of the score of lawsuits during the past twelve months against municipalities all over the United States for failure to keep their sidewalks in proper condition.

The actual merits of this particular case, *Mandy McFarland v. City of McCaysville* (Court of Appeals, Division 2, No. 19, 347; May 18, 1929), were not discussed and the action was referred to the lower court for trial. Mrs. McFarland had tripped over a 6-inch fire-plug on the sidewalk.

A judgment of $2,500 against Kansas City was recently awarded Mrs. Mary N. Scanlan, who tripped over an iron band which had been installed to protect the curb and had been knocked out of place (*Scanlan v. Kansas City*, 19 S. W. 2d, 522; April 29, 1929). "The defect in the sidewalk existed in a dense business section of a large city," commented Judge E. C. Bland, of the Kansas City Court of Appeals. "The city was charged with a much greater amount of diligence than had the defect existed in a place which few people frequented."

Factors in Determining Reasonable Care for Safety

Theoretically, a municipality is required to keep all its sidewalks in a safe condition. This duty is not performed by keeping in repair only the sidewalks in the most congested part of the city. However, the size of the city, the amount of travel over the sidewalks in a particular section of the community, and other surrounding facts, are taken into consideration by the courts in determining what is reasonable care. The probability that no one unacquainted with the defect in a sidewalk will pass over it, is no excuse.

Because a cement block protruded about 1¾ inches above the level of the sidewalk and at the edge of a depression 4 or 5 inches deep, damages were awarded not long ago to Mrs. Jennie McGandy against the city of Marshall, Minn. (*McGandy v. Marshall*, 227 N. W. 177; October 18, 1929). The Minnesota Supreme Court held that the city should have known of this defect and had been negligent.

A similar case arose in Rhode Island last year after Mrs. John Quinn had tripped over a cement block about 1¼ inches above the surface of the sidewalk, in the village of Peace Dale (*Quinn et ux. v. Stedman*, 146 Atl. 618; June 7, 1929). She brought suit because of personal injuries, and her husband brought suit because of the loss of her services while she was disabled because of the accident. A judgment of $200 was granted.

"Certain inequalities in walks are inevitable, and such do not constitute negligent unkeep," declared Judge Chester W. Barrows of the Rhode Island Supreme Court. "The requirement only is to keep sidewalks reasonably safe. A requirement of absolute safety would be an intolerable burden upon a municipality. Every possibility of an accident is not to be anticipated. The mere fact of an accident does not warrant an inference that the walk was not reasonably safe."

In Ohio the doctrine seems to be that the town is not liable for slight inequalities of the sidewalks unless there is something about them especially calculated to result in injuries to pedestrians.

In Massachusetts questions of negligence in the upkeep of sidewalks seem to be submitted to juries as a matter of course.

The Pedestrian's Duty

The duty of pedestrians to observe due and reasonable care for their own safety was emphasized a short time ago in Iowa. "One stepping from a walk at a place other than at a crossing is bound to observe the distance to the street," asserted Judge T. S. Stevens of the Iowa Supreme Court, in *Corbin v. City of Dubuque*, 224 N. W. 828 (April 2, 1929). "He cannot go blindly from sidewalk to street at places of his own choosing. To adopt a rule that would impose an absolute duty upon cities to provide steps or guards at every place along sidewalk where elevation is too great for convenience, would place an unwarranted burden on them."

After slipping on a loose brick on the sidewalk, Mrs. Mary Collins brought action against the city of New Orleans (*Collins v. Lyons*, 120 So. 418; February 11, 1929). Damages were denied by the Louisiana Court of Appeals on two grounds: first, because the city had not known of the condition; second, because the sidewalk had been reasonably safe despite the defect.

Because a municipal "encroachment tax" was charged for the existence of a trapdoor through a sidewalk, the Supreme Court of Montana not long ago held that the city of Butte had constructive knowledge of a possible dangerous condition and should have taken steps to warn pedestrians (*Olson v. City of Butte*, 282 Pac. 222; December 26, 1929). Mrs. Mary C. Olson had bumped against an insufficient barrier around an open trapdoor. This gave way and she fell into the basement.

In California, damages were awarded Mrs. Anna Rafferty against the city of Marysville because she lost her balance when she stepped off a curb and fell, fracturing her left ankle and left elbow (*Rafferty v. City of Marysville*, 280 Pac. 118; July 23, 1929). Although the general practice of the municipality was to bring the surface of the sidewalk to a level with the surface of the street, at this particular intersection there was a height of fifteen inches between the two levels. Because the city had accepted the work of the contractor, it was held to have had constructive notice of the condition. It was shown at the trial that the Mayor of the city, who was also chairman of the municipal committee on streets and roads, had been notified. The Court maintained that no one would expect a step of such distance at the end of a paved sidewalk without a sign or a warning.

Icy Sidewalks

A great many accidents have occurred because of the slippery condition of sidewalks in the winter. While cities are charged with responsibility for the removal of accumulations of ice and snow, they are not bound to keep their sidewalks absolutely free from ice and snow at all times. Weather and climatic conditions usually affect the decisions of the courts in such cases.

The owner of a building may not let water accumulate from rain or snow upon the roof and discharge it upon the sidewalk where it freezes and forms ice, under an opinion of Judge T. S. Stevens of the Iowa Supreme Court, in *Updegraff v. City of Ottumwa*, 226 N. W. 928 (Oct. 15, 1929). He added that the duty of maintaining sidewalks in a reasonably safe condition imposed upon municipalities does not relieve property owners of responsibility.

"Mere slipperiness of a sidewalk occasioned by ice and snow is not such a defect as will make a municipality liable for damages," declared Judge Wm. H. McSurely of the First District Appellate Court of Illinois, in *Hobbs v. City of Chicago*, 248 Ill. App. 183

(March, 1928). "In the winter time bits of smooth ice on the sidewalks are almost universal. It would be unconscionable to hold the city liable to everyone who might be injured by slipping and falling because of them. The city cannot be held liable for the slipperiness of the ice on the sidewalk and could not possibly prevent such patches."

The question of negligence is the controlling one in all cases against municipalities for damages because of defective sidewalks. If the city is able to show that it has used reasonable care and skill in the construction and maintenance of its property, it is exonerated from liability. When unusual or extraordinary circumstances arise which cause accidents, the city is not responsible unless it has knowledge of these conditions in time to either make repairs or give warning to the public of the dangerous conditions.

"Negligence is relative to the time, place and circumstances," asserted Judge Emmet Seawall of the California Supreme Court, in the Rafferty case noted above. "Each case must depend upon its own statement of facts. So varying are the factors that no hard-and-fast rule may find practical application in the great majority of cases."

Accounting and the Water-Works Budget

By BEN H. BRIDGES
CITY AUDITOR, TALLAHASSEE, FLA.

THE basis of all municipal accounting for water-works should be a budget. The budget is a working guide for the management similar to the blueprint for the builder. I recommend the mechanical budgetary system of accounts with the use of the function, character and object code. With this code in proper operation, there is available at all times not only the amount of each expenditure, but an analysis of all expenditures.

One of the great advantages of this system is that an accountant can prepare any cost statement on short notice. There is no difficulty at all in knowing the cost of the operation of any machine or pump. The subsidiary ledgers and records are perhaps of more interest to managers and operators.

If more than one utility is operated by the same company or municipality, all meters should be read at one time and all service should be billed on one bill. A specimen meter card and ledger of original entry are illustrated. All billing should be done on machines which automatically calculate and prove the work and print the bills in triplicate. I favor the ledger stub method of keeping track of payments, as it facilitates bookkeeping.

The system of keeping one water meter in one location as far as possible, has distinct advantages. To carry out this idea in Tallahassee, we have been trying out a method of locking-off and locking-on at the service cock. One of these cocks with seals is used on each installation. There has been some trouble with tenants and plumbers breaking these seals. In order to perfect the system of keeping one meter in a permanent location, we have devised a scheme of serial numbers for all meters. The practice of keeping city serial numbers on all meters and a record card of each meter is very important to the success-

Old Ledger Account—Page _____ No. of Account

Name _____ Name _____

Address _____ Name _____

LIGHTS	LIGHTS	POWER	POWER	GAS	GAS	WATER	WATER
City No.							
Makers No.							
Size							
Make							
Date Set							
Date Removed							
Gal. or Cu. Ft.							
Location							
Constant							

MONTH	LIGHTS	POWER	GAS	WATER	Date Read	Serv. off	Serv. on	TOTAL CONSUMPTION		AMOUNT	
March			00					Lights Power Gas Water	March		L P G W
April			00					Lights Power Gas Water	April		L P G W
May			00					Lights Power Gas Water	May		L P G W
June			00					Lights Power Gas Water	June		L P G W
July			00					Lights Power Gas Water	July		L P G W
Aug.			00					Lights Power Gas Water	August		L P G W
Sept.			00					Lights Power Gas Water	Sept.		L P G W
Oct.			00					Lights Power Gas Water	Oct.		L P G W
Nov.			00					Lights Power Gas Water	Nov.		L P G W
Dec.			00					Lights Power Gas Water	Dec.		L P G W
Jan.			00					Lights Power Gas Water	Jan.		L P G W
Feb.			00					Lights Power Gas Water	Feb.		L P G W

LEDGER PAGE OF ORIGINAL ENTRY, TALLAHASSEE WATER-WORKS ACCOUNT

This can also be used to continue an old account. The page shows the consumption of gas and electricity as well as of water

METER RECORD
Water Division, City of Tallahassee, Florida

DATE AND STREET LOCATION OF METER

City Serial No. ..... Maker's No. ..... Gals. or cu. ft. .....

Date bought ..... Make ..... Size ..... Location .....

RECORD OF TESTS

Date	As Found	As Left	Repairs and Remarks

AT THE LEFT IS A REPRODUCTION OF THE ORIGINAL METER RECORD CARD USED IN TALLAHASSEE

SERVICE RECORD

Account No.	Service On	Service Off	Remarks

AT RIGHT, THE REVERSE OF THE METER RECORD, WITH SPACE FOR THE SERVICE RECORD OF THE METER

WATER **RECORD OF METERS REPAIRED** **WATER**

Date	Our No.	Meter No.	Make	Glass	Dial	Gears	Screws	Top	Bottom	Cause of Meter Stopping REMARKS:	Name

THE CARD AT THE LEFT IS USED FOR THE COMPLETE SHOP RECORD OF METER REPAIRS, WITH DETAILED ENTRIES

ful management of the water-works. All requests for meter removals, sets, taps or any job should first be entered in a register with a serial number, and from this register a work order should be made. When the work is completed, the labor, materials and such other information as is necessary should be entered on the work order. Thus, all records for the ledger, including materials used and labor, may be found on the work order. Storeroom supplies should be controlled from materials used or sold and entered on the work orders.

An equipment register should be maintained by the city. This register should give all the essential information as to each piece of water-works property, machinery or equipment, such as the date required, price, serial number, etc. Any ordinary loose-leaf ledger may be used for this purpose with a proper index.

An insurance register should be kept, showing at a glance the policy number, name of company, amount of insurance, agent, rate, premium, date of expiration, date canceled, amount of any refunds, exact property insured, and space for remarks.

Some people may think that the records suggested above are altogether too numerous, but I personally have tried both methods and I find that less work is required in the long run to have the proper records and keep them posted at all times, to say nothing of the enormous loss which may result through faulty accounting.

—From a paper read before the Florida Section of the American Water Works Association.

AT THE RIGHT IS SHOWN THE COMPLETE UTILITY WORK ORDER THAT GOES TO THE SHOP WITH EVERY REPAIR JOB

WATER — **UTILITY WORK ORDER**

City of Tallahassee, Florida

Order No. .....

Date ....., 192....

Name .....

Street ..... **No.** .....

Always be sure to get House Number

Work To Be Done .....

REPORT

METER	Set	Out	Remarks
City No.			
Mfgrs. No.			
Size			
Make			
Date Set			
Date Rmvd			
Location			
Index			

Date .....

Signed .....

Artcraft Printers, Tallahassee, Florida

PLEASE BRING THIS BILL OR YOU WILL BE DELAYED

CODE: PWR—Power ARR—Arrears **BILL RENDERED MARCH 31, 1930**

$1.00 Extra if Not Paid by 10th. Service Cut Off if Not Paid by 15th.

TO CITY OF TALLAHASSEE, FLORIDA, DR.

Dates		Meter Readings		Consumption			NET BILL
PREVIOUS	PRESENT	PREVIOUS	PRESENT	ELECTRIC K. W. HOURS	GAS 100 CUBIC FEET	WATER 100 GALLONS	

ANY COMPLAINTS SHOULD BE MADE BY THE 5TH SO THAT ADJUSTMENT CAN BE MADE BEFORE THE 10TH

MAIL THIS STUB WITH CHECK

CASHIER'S COUPON

MARCH 31, 1930	NET BILL

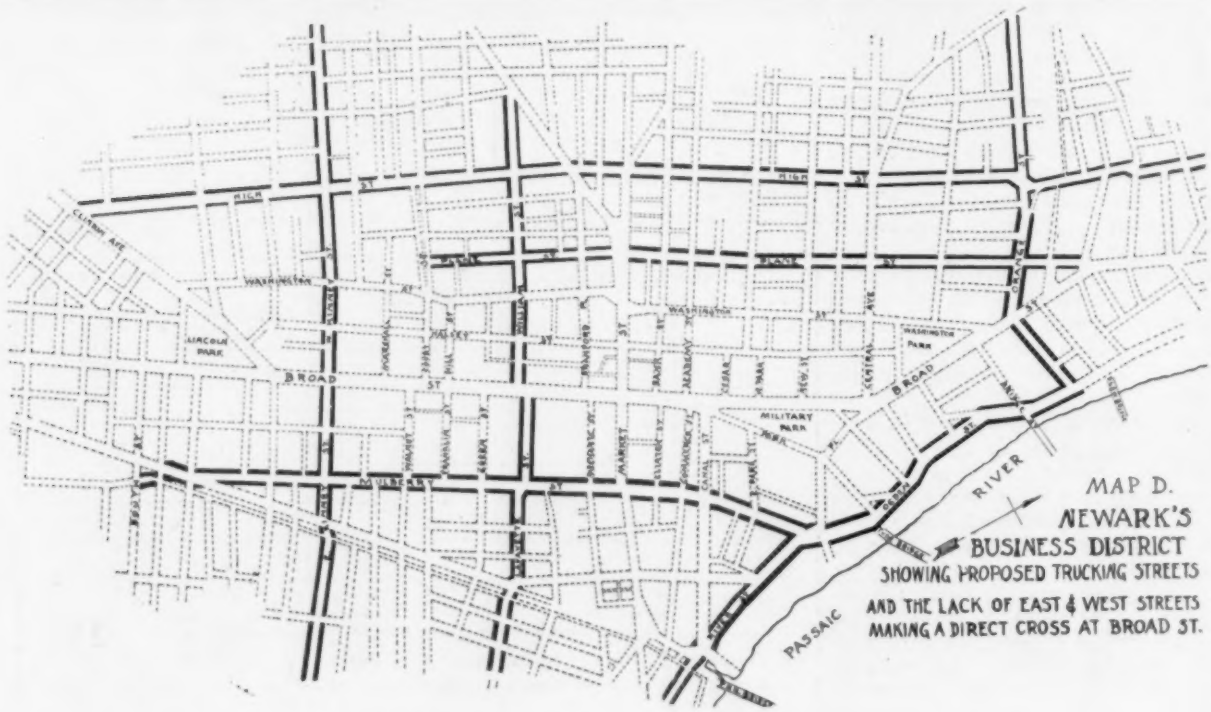
LEDGER COUPON

MARCH 31, 1930	NET BILL

THE BILL USED IN TALLAHASSEE FOR WATER, GAS AND ELECTRIC ACCOUNTS

It is mailed in three sections, the first at the left containing the detailed information, and on the reverse the complete list of rates. The second stub is the cashier's coupon which is returned by the consumer when paying the bill, and at the right is the ledger coupon or office record

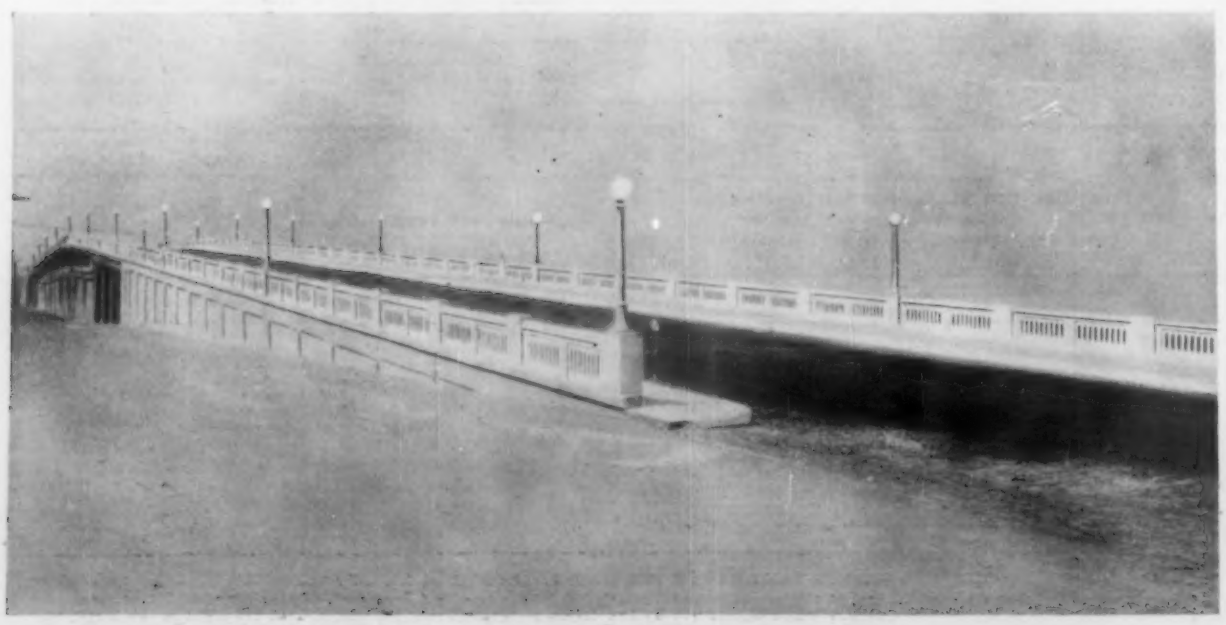
PICTURES AND PARAGRAPHS FROM NEAR AND FAR

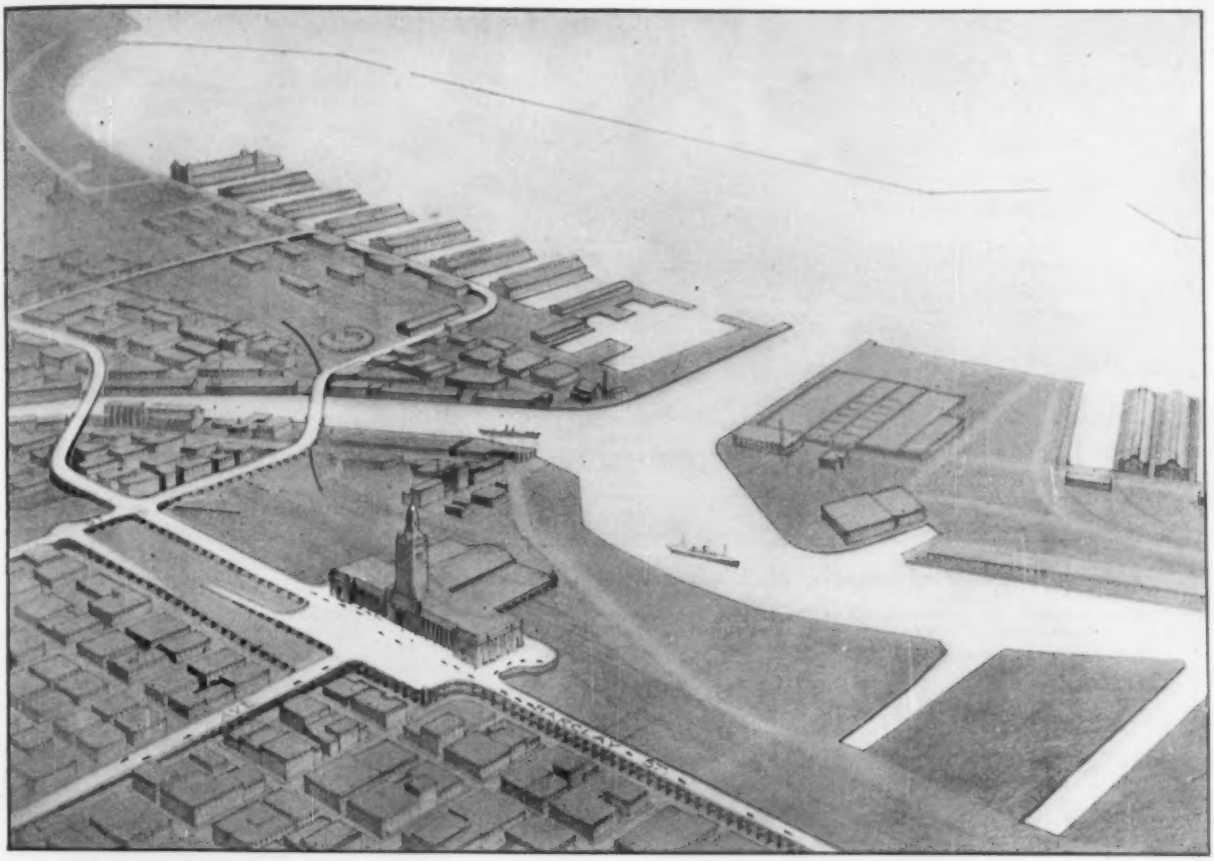


Planning for Freer Traffic Flow for City Streets

Few cities are without traffic problems great enough to challenge their major resources and planning skill. Above is shown a proposal for diverting heavy traffic from the present, badly planned, central business section of Newark, N. J. This is from an elaborate study by the Mayor's Traffic Committee, just published

Below is the Beaver Street Viaduct, Jacksonville, Fla. This $500,000 railroad grade-crossing elimination project represents municipal and private cooperation, and is one of the most notable achievements in traffic facilitation in Florida's recent history. City Commissioner T. C. Imeson and City Engineer W. E. Sheddan figured prominently in the undertaking

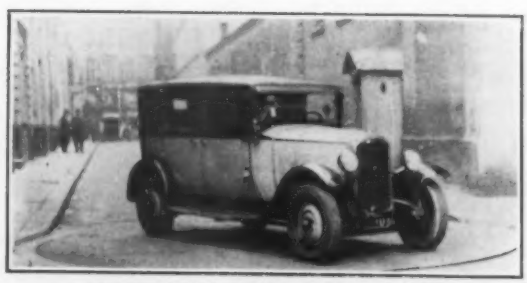




Milwaukee Visualizes a Terminal Area for Air-Water-Rail Transportation

A comprehensive regional highway system has been developed as a framework for the Greater Milwaukee of the future. But recognition has now come, says C. B. Whitnall, Secretary of the Board of Public Land Commissioners of that Wisconsin city, that for complete efficiency in planning, there must be developed a unified system of terminals for rail, air, and water, as well as automobile transportation.

Such a unified plan, Mr. Whitnall shows, calls for a vast amount of cooperation on the part of common carriers and other interests, and by public officials, and to the former it offers incomparable advantages. The gross benefits of such a service he conceives as a public benefit commensurate with other city plan measures. He has therefore prepared for the Board a splendidly conceived scheme, the central portion of which is here reproduced, and the full significance of which becomes apparent from a study of the recommendations which the plan illustrates.



Paris Builds Motor Turntables

These are said to be the first municipal provision of their kind in the world. They are installed at the end of narrow streets, and the motorist for whose convenience they are provided has only to press a button conveniently placed in an adjoining wall

A New Move In Seattle

Many cars which formerly stood at the curb, retarding moving traffic and running up street accident totals, now find off-street parking facilities, including this public-service daytime storage space on the roof of the new Seattle public market

BLIGHTED AREAS AS REPLANNED IN FOUR CITIES

Twelfth and Market Streets, St. Louis, Before Clearance

These buildings disappeared in one of the greatest public improvement clearance schemes ever initiated in an American city—that which is clearing the way for the magnificent civic center

The New $5,000,000 Civil Courts Building St. Louis

The lawn of this building was formerly occupied by the practically obsolete stores above illustrated. The building is the most recent addition to the so-called Memorial Plaza group, which comprises approximately 52 acres, or an area of 9½ blocks at the west edge of the business district. The property to the right of this Civil Courts Building will be occupied by the new Federal Building

(The illustrations on this and the facing page are reproduced from a paper entitled "The Economic Values Attendant Upon the Replanning of Blighted Areas," presented at the annual meeting of the Philadelphia Housing Association, by the Editor of The American City, and published by the Association in pamphlet form under the general title, "Know Your City." Address Philadelphia Housing Association, 311 South Juniper Street, Philadelphia)

Morton Street, Boston, 1915

For 50 years, this street, which was from 11 to 14 feet from wall to wall, constituted a menace to health and safety

Morton Street, "Converted"

The "Morton Street Improvement," a part of the North End replanning scheme of the City Planning Board, effected this change

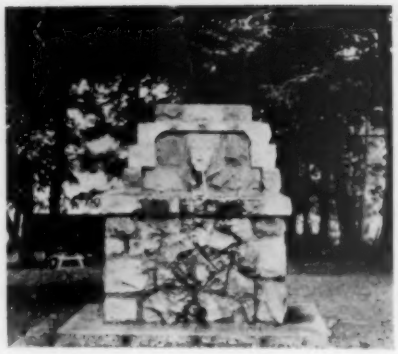
A Chicago Skyline of a Few Years Ago

The Same Section of Chicago Today

Where shacks and shanties and warehouses formerly predominated, the great Wacker Drive project has brought large modern buildings with attendant increases in land values and tax returns to the city offsetting many times the cost of the development

Chicago Aerial Surveys

Roadside Drinking Fountains



A Notable Development in Oregon

MOTORISTS driving along the highways in the state of Oregon will occasionally pass a sign announcing good drinking water 300 feet ahead. Some thirty artistically designed roadside fountains have been provided and so marked by the Oregon State Highway Commission, and others are being provided where suitable conditions are found, according to T. M. Davis, Highway Engineer, Bureau of Public Roads, Department of Agriculture, Washington, D. C.

"No standard plans have been prepared for the construction of these fountains," Mr. Davis reports in the April issue of *Public Roads*, each fountain being designed by the engineers to harmonize with the surroundings and to make use of the native materials at hand.

"At the springs a small reservoir of concrete or cement rubble masonry is constructed, from which a pipe leads to the fountain. Each reservoir has overflow and drain pipes. The fountains are of native rock, some of them built of hand-faced stone, while others are of rubble masonry, using boulders or large-size gravel.

"In most instances the fountains were constructed by the regular maintenance forces of the State Highway Department, though some were constructed by contractors' forces."

The fountains have bubblers for drinking, and a pool from which water for filling radiators may be taken. When there is not a sufficient supply of water for bubblers, a small pipe is used for drinking purposes. Many of the fountains have a step at one of the bubblers, for children; and a few have a small pool built near the ground for dogs and other small animals. Shut-off and drain valves are provided for use in freezing weather.

"The water used is from live springs and is tested by the state to ascertain its suitability for drinking purposes before the fountain is erected . . . and ample parking space is provided off the highway.

FROM MATERIALS AT HAND

Boulders or face-stone, or both, are used in the construction work, as shown, with reservoirs of masonry work. The illustration directly above shows how provision is made for man, beast and automobile. All fountains offer a constant invitation to the birds

"Many [of the fountains] are situated at scenic locations with tall evergreen trees and beautiful shrubbery, ferns, and wild flowers; and motorists find it a joy to tarry for a few minutes' rest."

Every state has its roadside beauty-spots, and its roadside sources of good drinking water which are capable of performing a definite public service, and at the same time of broadening the state's prestige with the vast multitudes now comprising the motor-traveling public.

For the benefits of the state or county official elsewhere who may want to profit by the Oregon experience in making highway travel more attractive, some idea of the cost per fountain is given.

"In the erection of five fountains in Oregon by the United States Bureau of Public Roads, built according to the same general plans of the state fountains, it was found that cement rubble masonry fountains cost from $200 to $300 each."

For the benefit of any one interested in the installation of roadside drinking fountains, attention is called to the standards of sanitation for such fountains which have been developed by the Committee on Plumbing of the American Public Health Association. These standards were published in THE AMERICAN CITY, December, 1929, page 109.

EACH DESIGNED TO FIT INTO THE LANDSCAPE

Concerted Attack on Housing Problem

ON June 4, at the office of Alfred E. Smith, formal organization was perfected by the Housing Association of the City of New York. Strangely enough, there has heretofore existed, in America's biggest city, no organized and widely representative body having as its main object the solution of one of that city's biggest problems—better housing for the great mass of its citizens.

Former Governor Smith heads the new organization as President, with Dr. Felix Adler and R. Fulton Cutting as Honorary Vice-Presidents. The active Vice-Presidents are Alexander M. Bing, Frederic A. Delano, Representative Ruth Pratt, and Mrs. V. G. Simkhovitch; and Howard S. Cullman is Treasurer. Thirty-five outstanding men and women have accepted election on the Board of Directors, from whom an Executive Committee of seven, with Stanley M. Isaacs as Chairman, has been chosen. The other members of this Committee are Alexander M. Bing, Harold S. Buttenheim, George B. Ford, Clarence Hoyt Holmes, H. H. Murdock, and Miss Rosalie Manning.

As outlined by Mr. Isaacs at the organization meeting, the general purposes of the new Association are "to promote improvement of housing conditions within the metropolitan area in various ways:

"1. Make new studies and correlate existing data as to conditions that affect housing.

"2. Print and disseminate information, and hold and address meetings, for the purpose of interesting and informing owners, builders, tenants, and others, as to needs, possibilities and methods of housing betterment.

"3. Cooperate with the activities of governmental agencies—legislative and administrative, state and local—concerned with housing in the metropolitan area.

"4. Cooperate with other organizations, corporations and individuals, interested in housing, real estate development, city and regional planning, parks, playgrounds, schools and transit, in so far as their programs or activities touch upon the improvement of housing conditions.

"5. Advocate legislation to establish and, from time to time, raise housing standards, and to prevent the creation of new slums.

"The immediate objectives are:

"1. Promote enforcement of, and study the need of improvement in, laws and ordinances relating to housing and coordinate existing activities toward that end.

"2. Stimulate the rehabilitation of blighted districts, and of unsafe and unsanitary housing, by reconditioning or by slum clearance and new construction.

"3. Evaluate the accomplishments of low-cost housing enterprises since the war, in New York and elsewhere and make available for future builders the results of such experience.

Housing Foundation

"The major objective to be developed in the future after the completion of the preliminary work outlined above is the creation of a Housing Foundation. This is to be an altogether new type of agency in this work. The foundation will have such a financial structure that it will be able to loan or invest in well-planned, low-cost housing enterprises, either for the construction of new housing or for the renovation and improvement of existing housing and aid experimental demonstrations of low-cost housing possibilities.

"The Foundation will also assist organizations of cooperators seeking to create their own cooperative housing developments.

"It will help to support research organizations contributing toward the advancement and application of technical knowledge with respect to site planning and housing construction."

In accepting the presidency of the new Association, the former Governor said:

"We give billions every year for philanthropic purposes. Huge foundations are being established for everything under the sun except housing. We spend hundreds of thousands of dollars to study crime and deliquency and disease, and do nothing to remedy what has been pointed out over and over again as the fundamental cause—bad housing. We have foundations for orphanages and schools and colleges, and do nothing to provide wholesome homes from which the students are to come.

"It is my hope that when the preliminary studies of this association have been completed, and the facts are laid before the citizens of New York, they will take the necessary steps to put housing on a substantial basis by the establishment of a well-considered housing foundation, empowered to invest in such a program."

1930 Census Figures—Cities Over 50,000

THE following list includes all cities having more than 50,000 population, according to the new 1930 enumeration, for which preliminary announcements of population figures were issued by the Department of Commerce from May 21 to June 20 inclusive. There are 87 such cities here listed. A similar list of 43 cities for which the population figures were announced up to May 20 was published on page 163 of the June number:

City	1920	1930
Akron, Ohio	208,435	253,653
Allentown, Pa.	73,502	92,052
Altoona, Pa.	60,331	81,503
Atlantic City, N. J.	50,707	65,748
Bayonne, N. J.	76,754	85,796
Berkeley, Calif.	56,036	81,543
Binghamton, N. Y.	66,800	76,601
Bridgeport, Conn.	143,555	147,206
Brockton, Mass.	66,254	63,695
Cambridge, Mass.	109,694	113,650
Camden, N. J.	116,309	117,172
Cedar Rapids, Iowa	45,566	55,939
Charleston, S. C.	67,957	62,123
Charlotte, N. C.	46,338	82,645
Chattanooga, Tenn.	57,895	119,539
Cincinnati, Ohio	401,247	449,331
Cleveland Heights, Ohio	15,236	50,123
Columbia, S. C.	37,524	50,195
Covington, Ky.	57,121	65,247
Davenport, Iowa	56,727	60,728
Des Moines, Iowa	126,468	142,469
Durham, N. C.	21,719	52,026
East Orange, N. J.	50,710	67,344
East St. Louis, Ill.	66,767	74,024
Elizabeth, N. J.	95,783	114,551
Erie, Pa.	93,372	115,875
Evanston, Ill.	37,234	61,766
Evansville, Ind.	85,264	103,151
Ft. Wayne, Ind.	86,549	115,121
Fort Worth, Texas	106,482	160,892
Fresno, Calif.	45,086	52,558
Grand Rapids, Mich.	137,634	168,234
Greensboro, N. C.	19,961	53,422
Hamilton, Ohio	39,675	52,108
Hoboken, N. J.	68,166	56,523
Houston, Texas	138,276	289,428
Huntington, W. Va.	50,177	75,575
Indianapolis, Ind.	314,194	362,564
Jackson, Mich.	48,374	54,870
Jacksonville, Fla.	91,558	129,682
Johnstown, Pa.	67,327	66,886
Kansas City, Kans.	101,177	122,327
Knoxville, Tenn.	77,818	105,797
Lansing, Mich.	57,327	78,421
Lawrence, Mass.	94,270	83,343
Lincoln, Nebr.	54,948	75,919
Little Rock, Ark.	65,142	81,624
Long Beach, Calif.	55,593	141,390
Louisville, Ky.	234,891	307,808
Macon, Ga.	52,995	53,866
Medford, Mass.	39,038	59,700
Memphis, Tenn.	162,351	252,049
New Bedford, Mass.	121,217	112,804
New Britain, Conn.	59,316	67,843
New Haven, Conn.	162,537	162,650
Newton, Mass.	46,054	65,295
Norfolk, Va.	115,777	127,808
Oakland, Calif.	216,261	284,213
Oak Park, Ill.	39,858	63,819
Oklahoma City, Okla.	91,235	182,845
Pasadena, Calif	45,354	75,875
Passaic, N. J.	63,841	63,108
Paterson, N. J.	135,875	138,267
Peoria, Ill.	76,121	104,788
Providence, R. I.	237,595	251,029
Pueblo, Colo.	43,050	50,102
Racine, Wis.	58,593	67,515
Reading, Pa.	107,784	110,289
Richmond, Va.	171,667	182,883
Rochester, N. Y.	295,750	325,019
San Antonio, Texas	161,379	254,362
Seattle, Wash.	315,312	362,426
Shreveport, La. (revised)	43,874	76,659
Spokane, Wash.	104,437	115,514
Springfield, Ohio	60,840	68,406
Tacoma, Wash.	96,965	106,837
Tampa, Fla.	51,608	100,910
Terre Haute, Ind.	66,083	62,543
Toledo, Ohio	243,164	290,787
Topeka, Kans.	50,022	64,005
Trenton, N. J.	119,289	122,610
Troy, N. Y.	72,013	72,350
Tulsa, Okla.	72,075	140,531
Union City, N. J.	60,725	58,588
Wichita, Kans.	72,217	109,822
Wilmington, Del.	110,168	104,941
Youngstown, Ohio	132,358	170,004

In the case of 4 of the cities listed above, the chamber of commerce estimates published in the April number of THE AMERICAN CITY—just prior to the beginning of the census enumeration—vary less than 2 per cent from the actual figures as now announced.

The Cincinnati estimate was 450,000 as compared with 449,331 actual; Memphis, 256,000 estimated, 252,049 actual; Peoria, 105,000 estimated, 104,788 actual; and Topeka, 65,000 estimated, 64,005 actual.

There still remain 47 cities having 50,000 population or over in 1920 for which the 1930 preliminary figures have not been officially announced. In some of these cities figures have been given out by the local enumerators, but, as mentioned last month, THE AMERICAN CITY is publishing only figures as reported from the Washington office of the Bureau of the Census. Figures released June 21-July 20 will be published in this magazine next month.

Causes of Congestion Analyzed by National Conference

IN an item headed "Control of Land Use Essential to Relieve Traffic Congestion," excerpts were published in THE AMERICAN CITY for June (page 5) from the preliminary report of the Committee on Measures for the Relief of Traffic Congestion, as prepared for submission to the Third National Conference on Street and Highway Safety, held in Washington the last week in May. The section on "Causes of Congestion," as modified and adopted by the Conference, is of interest and importance:

"There are many elements of traffic congestion. Outstanding among these are the growth of population and increase in the number and use of motor vehicles. In the last analysis, however, these elements create congestion by reason of three fundamental causes: (1) inefficient and conflicting use of available street and highway space; (2) excessive demands upon inadequate street and highway systems; and (3) unduly intensive use of land out of proportion to its contribution by taxation, benefit assessments or otherwise, to the provision of necessary traffic and transportation facilities.

"Inefficient and conflicting use of available street space is a condition which, although it can never be entirely eliminated in the average city, is subject to marked alleviation by effective traffic control systems, parking regulations and other control measures.

"Inadequacy of the street and highway system developed without definite and farsighted planning results in the concentration of traffic on a limited number of routes, with attendant congestion. It should be realized that the present street systems were never constructed for modern traffic needs. Under present conditions these highways may be entirely unsatisfactory, yet analysis would reveal that, in many cases, their utility may be greatly increased by carefully planned improvements at critical locations, and at costs much less than the losses due to the continuance of present conditions.

"Mass transportation vehicles, both street cars and busses, private and commercial vehicles and pedestrians are individually and as groups seriously affected by street congestion, and themselves in turn are contributing factors to this condition. Each of these classes has a definite place in the traffic plan which must be considered, and a proper allocation of street space must be determined upon. The lack of such planning results in confusion, disorderly movement and congestion.

"Simultaneously with the application of measures for the better use of existing streets, and of improvements in street widths, street design, and intersection treatment, municipalities will be very shortsighted if they fail to approach courageously the proper economic relationship of land uses to traffic and transportation facilities. Prevention in most cases is more sensible and less costly than relief. Much can be accomplished, through wise city planning and effective zoning ordinances and building codes, to establish and maintain sound relationships between traffic and transportation facilities, on the one hand, and building bulks, extent of lot use, character of occupancy, and grouping, on the other.

"As an important contribution to this end and as an example to all concerned, the Committee considers that federal, state, and municipal governments should give prompt consideration to the problems of traffic congestion that will arise through the erection of new buildings for governmental use. Plans for the location and construction of such structures should recognize the need for adequate street service adjacent to these areas, easy access to the buildings, requirements of employees for off-street parking, congestion incident to unit grouping, and the needs of the general area in relation to such buildings or groups of buildings."

890 Municipalities Spent Over $33,000,000 on Public Recreation Programs in 1929

FOR the year 1929, 945 municipalities reported 13,397 separate playing areas of all kinds, 1,137 of which were opened for the first time during the year. Expenditures for recreation programs in 890 municipalities totaled $33,539,805.79. The gains represented by these figures over corresponding figures for previous years are typical of the great progress made by the recreation movement as a whole, details of which are shown in the Year Book of the Playground and Recreation Association of America.

The Year Book, as usual, constitutes one issue of *Playground and Recreation* (May, 1930), and is "a report of the public recreation facilities, leadership, expenditures, and programs of American municipalities."

A total of 22,920 employed recreation workers was shown, with 2,640 of this number employed full time the year around. A total of 136,043,123 participants was reported for 5,330 playgrounds in 565 cities; and the number of spectators reported from 2,288 playgrounds is 23,249,203. Salaries and wages paid recreation leaders are presented for the first time, and cover 657 cities, which reported expenditures under this head totaling $7,059,865.69.

The total number of playing areas and facilities reported are as follows:

Outdoor playgrounds	7,681
Recreation buildings	678
Indoor recreation centers	2,341
Athletic fields	1,709
Baseball diamonds	4,024
Bathing beaches	409
Golf courses	299
Stadiums	81
Summer camps	115
Swimming pools	1,010
Tennis courts	7,960

The lists of officers of Recreation Commissions, Boards, and Associations, and the tables of Playground and Community Recreation Statistics this year occupy 55 pages of the book.

Architectural Control Now a Fact in Washington

THE recently enacted Shipstead-Luce bill provides that plans for all buildings erected on private property facing on the "grounds of the Capitol, the grounds of the White House, the portion of Pennsylvania Avenue extending from the Capitol to the White House, Rock Creek Park, the Zoological Park, the Rock Creek and Potomac Parkway, Potomac Park, The Mall Park System and public buildings adjacent thereto, or abutting upon any street bordering any of said grounds or parks" must be submitted to the Commission of Fine Arts for approval. Under the bill, the Commissioners of the District of Columbia, in consultation with the National Capital Park and Planning Commission, shall prepare plats defining the areas within which application for building permits shall be submitted to the Commission of Fine Arts for its recommendations.

It has been apparent to those who were interested in the extensive public building program of the National Capital that owners of private property should not be permitted to mar or destroy the architectural effect of the public monumental buildings on which millions of dollars of the people's money will be expended. The Shipstead-Luce bill sets up a most valuable control of the architecture of private buildings which are a part of the picture of public buildings. The law has already been called into service in the case of application for building permit for a structure to face on the grounds of the National Capitol. It will undoubtedly be called into service many times and should prove a potent method of protecting the investment of the people of the United States in their public buildings and grounds.

HARLEAN JAMES,
Executive Secretary, American Civic Association.

FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

City and State Combine to Replace Out-dated Bridge

PEKIN, ILL.—The civic pride of Pekin, Ill., has reached a new pinnacle. It came with the completion of a $550,000 highway bridge across the Illinois River, formally opened to traffic May 18, 1930. This bridge replaces a steel-cylinder pier structure that had been in service for more than fifty years and for the past ten years had been condemned, although its importance as a connection in one of the principal highways into the city made desirable its temporary maintenance for light traffic.

Financial difficulties prevented the city of Pekin from evolving any tangible plan for this project, although it had been discussed for years, and it remained for Martin B. Lohman, state representative from Pekin, to secure the adoption of a bill providing $400,000 state aid for the structure. Public-spirited citizens underwrote the additional sum when estimates were prepared to show a total cost of $540,000. Work was started August 1, 1928, after contracts had been awarded to the Janssen & Schaefer Co., Pekin, for the 375-foot east approach; to the Congress Construction Co., Chicago, for the sub-structure; to the Vincennes Bridge Co., Vincennes, Ind., for the superstructure.

The bridge was designed by the Illinois State Highway Department, with the exception of the lift span, which was designed by the Strauss Engineering Corporation, of Chicago. The bridge is 1,175 feet in length, not including the 375-foot east approach. The lift span is 259 feet in length, weighs approximately 450 tons, and is hoisted by two 75-horsepower motors and the aid of counterweights. It has a 24-foot roadway and a 5-foot sidewalk on one side.

The city of Pekin subsequently floated a $100,000 bond issue to take up the guarantees signed by the citizen underwriters. The Township Board added $20,000, and two railroads over whose tracks the approach forms a viaduct added $30,000, to complete payment for the structure.

R. BROOKS WATSON.

Boat Harbors on the Pacific Coast

SAN FRANCISCO, CALIF.—San Francisco's fine boat basin has been overcrowded for years. Finally there were more than 300 applicants on the waiting list for berths. That meant disappointment to prospective pleasure-craft owners, and the loss of hundreds of prospective sales by boat builders. As a result, the boat builders, through their Chamber of Commerce, appealed to the city government to come to their aid, and have been instrumental in getting a 1,000-foot municipal harbor addition built. They have also visited no less than a dozen small towns on the bay, and interested the authorities in each of these in building suitable municipal boat basins.

The Pacific Coast is probably far ahead of the other parts of the country in this commendable public activity. The city of Berkeley recently announced plans for the immediate building of a boat harbor to cost half a million. It will be flanked by the town's airport. Long Beach and Wilmington, two other California towns, are jointly spending $7,000,000 for harbor improvements, including facilities for private craft. The town of Martinez, also on San Francisco Bay, is building an elaborate harbor for pleasure boats, as are Santiago, Santa Barbara, and Monterey. Waterfront towns in the states of Washington and Oregon are doing the same thing.

MONROE WOOLLEY.

THE NEW $550,000 HIGHWAY BRIDGE AT PEKIN, ILL., WITH THE 259-FOOT LIFT SPAN RAISED
The old steel-cylinder pier bridge, in service for more than fifty years and now to be dismantled, can be seen through the channel opening. The east approach ramp, 375 feet in length, is out of sight at the left

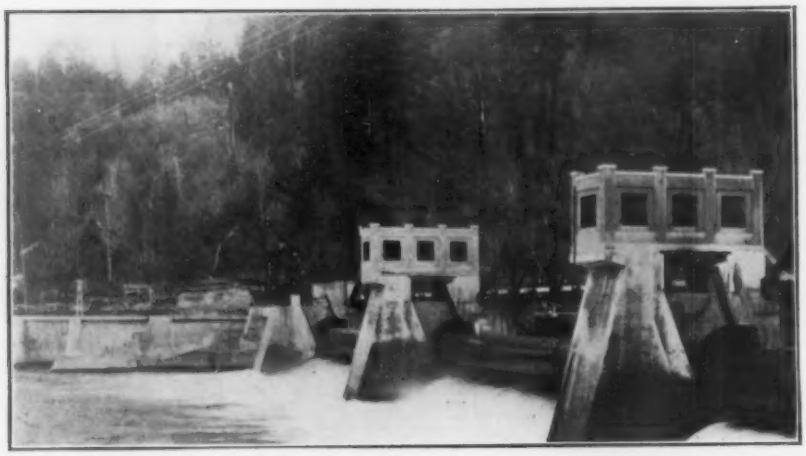
West Chicago Park Commissioners Provide Rifle Range

CHICAGO, ILL.—We have a well-constructed rifle range in Austin Town Hall. It is used every evening in the week, and some of the afternoons. We are only permitting clubs to use it that furnish their own range officers, and only gallery loads are to be used. We have six stalls with trolleys and targets. The rear wall of the gallery is made up of ¼-inch iron plate. The operation cost at the present time is just the services of a janitor, owing to our insistence upon clubs' furnishing their own range officers.

Rules and regulations have been compiled by a committee made up of various clubs using the range. These clubs assess themselves 10c a man per evening, to help defray the cost of repairs and new equipment. Each club has a membership of from 30 to 50 members. Up to this time, we have had wonderful success with the operating plans used at this park.

WILLIAM J. H. SCHULTZ,
Superintendent of Small Parks and Playgrounds, West Chicago Park Commissioners.

EUGENE'S NEW POWER-PLANT



LOWER SIDE OF LEABURG DAM ON McKENZIE RIVER

Second Step Taken in Far-Sighted Hydro-Electric Program

EUGENE, ORE.—When this city completed its Leaburg power-plant last December, supplementing the city's hydro-electric plant near Walterville, municipal ownership received a new impetus. From the first, Eugene's power and water departments have been self-supporting and rates consistently low. In 1908 the city was serving 8,000 people. To meet the demands of a rapidly increasing population, now estimated at 28,000, a comprehensive program of power development on the McKenzie River has been planned, which, when completed, will generate upwards of 75,000 horsepower—plants on the upper McKenzie River to be constructed as needed. The new plant, near Leaburg, Ore., 23 miles from Eugene, is the first unit in this plan and will generate 20,000 horsepower when the second generating unit is installed.

The diversion dam raises the water 19 feet and diverts it into a canal 5 miles long which connects with the power-house. The capacity of the canal is 2,200 cubic feet per second. Two 12-foot penstocks carry the water to the turbines, developing a drop of 90 feet.

DAM EQUIPPED WITH ROLLER GATES

The dam proper is of unusual type. With three 100-foot spillway sections between, it is constructed in four piers, each 11 feet wide. Three roller gates consisting of large steel cylinders, each 12.5 feet in diameter and 100 feet long, furnished by the Willamette Iron & Steel Works of Portland, Ore., close the openings over the spillways between the piers. The cylinders, which can be adjusted for any height to meet flood conditions, will be lowered into contact with the top of the concrete when the river is at low stage. When the roller gates are fully open the dam is estimated to pass a flood of 90,000 cu. ft. per second. Two Broome gates, from Phillips & Davies, Kenton, Ohio, regulate the flow of water into the canal, while a penstock with its entrance in front of these gates leads to an auxiliary plant which, when built, will utilize the flow permitted to pass the dam during summer months.

Fish are prevented from entering the canal by an oscillating fish screen installed at its entrance, and a pair of fish ladders, consisting of 17 compartments each, admit of the easy passage of fish over the dam. Another Broome gate closes a 30-foot sluiceway adjacent to the canal entrance. This sluiceway is designed to prevent the deposit of gravel in the canal entrance. The low spillways placed in the river channel between the piers have aprons extending 64 feet downstream. The aprons, which rest on the original river bed, support a row of baffles. The dimensions and shape of the spillway section were determined by experiments with a model dam. A wing wall 70 feet long extends into the east bank, with an earth fill extending 170 feet farther. An operating bridge is carried on the piers near their upstream faces. A total of 14,000 cubic yards of concrete and 200 tons of reinforcement steel are contained in the dam.

The canal has a bottom width of 30 and 32 feet and an average grade of 0.00025. It is unlined and was constructed mainly in earth. By enlarging the lower end, a forebay was formed, where seven automatic siphons with a total capacity of 3,500 cu. ft. per second will take care of excess water and maintain a constant operating level. The penstocks here are twin concrete tubes, built in sections and connected to concrete scroll cases, only one of which is built. They are controlled by Broome gates.

POWER-HOUSE AND GENERATORS

The power-house is of reinforced concrete, the generator-room being 82.5 by 33 feet, with a gross height of 80 feet above the bottom of the foundations. A one-story part of the building contains rooms for operating switchboard, auxiliary equipment, storage battery and shop. The generating unit consists of an S. Morgan Smith Co. 10,000-horsepower vertical-shaft turbine direct-connected to a 7,500-kva. Westinghouse dynamo which generates at 11,000 volts. Current is now being transmitted at 44,000 volts to conform with the Walterville equipment, but will eventually be stepped up to 66,000 volts. The new transmission line is connected with the old line at the Walterville plant, 8 miles below.

Through cooperation with the faculty of the University of Oregon School of Architecture and Allied Arts, many artistic touches were added. Harry Camden designed figures over the main entrance, representing light, power and heat, with the source in the Three Sisters, snow-capped peaks of Oregon.

As it stands, with one 10,000-horsepower unit installed, the plant has cost $1,950,000, and the estimated cost with the second generating unit in place is $2,250,000. The city sold bonds for $800,000 of this, but the remainder will be taken care of from earnings, as will the retirement of the bonds when due. O. C. Hartman, of A. Guthrie & Co., Inc., handled the contract; while Stevens and Koon, Portland, Ore., were consulting engineers. J. W. McArthur was supervising engineer for Eugene. Working 24 hours a day, the contractors did the job in 18 months.

C. A. McCLAIN,
General Superintendent-Secretary, Eugene Water Board.

Aid in Studying Needs of Contagious Disease Hospitals

AKRON, OHIO.—The Hospital Library and Service Bureau of the American Hospital Association of Chicago has sent valuable information to the Health Committee of the Akron Chamber of Commerce on hospitalization methods and work.

This service was rendered without cost to the Akron Chamber of Commerce, and similar service is available for any chamber of commerce desiring to write to the Association in Chicago.

The Health Committee of the Akron Chamber of Commerce has been making a study as to the type of building and service required for taking care of communicable diseases in this city. The subject is such a complicated one that the Hospital Library and Service Bureau was written to for detailed information, and the reports which were sent to our Committee were of much value in making an analysis of the situation in this city, and also furnishing information in regard to communicable disease hospitals in other cities.

VINCENT S. STEVENS,
Secretary, Akron Chamber of Commerce.

Capital Budgeting a Reality in Schenectady

SCHENECTADY, N. Y.—A Capital Budget Commission consisting of four city officials and three private citizens was appointed on May 17, 1930, by Mayor Henry C. Fagal as a permanent body to budget capital expenditures for Schenectady. All but two of the members of the Commission previously served on the temporary Commission appointed by Mayor Fagal in June, 1928, to study current and capital expenditures and the means of financing them over a ten-year period. The first Commission held more than thirty meetings and devoted nine months to the survey. The report finally presented to the Mayor and the Common Council has been hailed as an outstanding contribution to the new science of capital budgeting, and requests for copies have been received from several hundred cities and private individuals.

The Commission concluded its work in April, 1929, and strongly recommended that it be made a permanent body in order to properly supervise the plan. The Bureau of Municipal Research, whose staff, under the direction of Joseph F. Base, prepared the details of the Long-Term Financial Program, immediately began a program of educating citizens in this phase of municipal finance. Articles on the subject appeared in the press, Bureau representatives addressed various organizations, and Bureau publications carried complete stories of the plan. The Chamber of Commerce collaborated with the Bureau in sending copies of the program to 1,400 citizens, and the city government printed an additional 1,000 copies for distribution. In all of this publicity the dominant theme was the necessity for establishing the Commission as a permanent body.

On May 6 the Council passed a resolution requesting the Mayor to appoint a new Commission, and the Mayor has appointed the following as members of the permanent body: Hugh R. McPartlon, President of the Common Council, Chairman; Frank R. Lanagan, City Engineer, Vice-Chairman; Albert H. Hall, Managing Director, Schenectady Bureau of Municipal Research, Inc., Secretary; Leon G. Dibble, City Comptroller; Walter H. Mishler, Commissioner of Public Works; James C. McDonald, realtor; Ira D. LeFevre, General Auditor, General Electric Company.

The immediate task confronting the Commission is the revision of the Long-Term Financial Program because of the fact that bonds have been authorized since it was drawn up which were not in the original draft, and because new city needs have presented themselves. The Commission must also act in an advisory capacity to the Common Council by considering all bond issues and reporting on them to the Council. If a proposed bond issue is not in the Program and if it will not fit in without adversely affecting future tax rates, the Commission must so advise the Council.

The Bureau of Research recently held a public meeting at which the problems facing the new Commission were discussed. At that time the Mayor and Council leaders, appearing before leading citizens, pledged themselves to be guided by the ten-year budget plan in all future city operations.

ALBERT H. HALL,
Managing Director, Schenectady Bureau of Municipal Research, Inc.

Suburban Chamber Stresses Civic Activities

EAST ORANGE, N. J.—With twenty-eight committees actively working on civic projects, and ten committees dealing with interests of business, the Chamber of Commerce and Civics of the Oranges and Maplewood emphasizes the peculiar angle its program must take because of the high-class residential character of the section of the metropolitan area which it is serving.

Last year the Chamber secured appointment by the Governor of a commission to study federalization of contiguous municipalities in congested areas.

It developed public sentiment respecting a cross-state highway through northern New Jersey to help relieve traffic congestion on existing roads.

It organized the most elaborate celebration of the Edison Light Golden Jubilee in communities of its size, centered around the fact that Mr. Edison's home is in West Orange.

It brought together official heads of Safety Departments from the majority of municipalities throughout Essex County, to consider better cooperation in administering the Uniform Traffic Law adopted by the state, and maintained 82 safety poster boards on which slogans were changed every month.

It secured action by local Health Boards in the Inter-Chamber Health Contest which won for East Orange first place in cities of its class for 1929.

It organized cooperative action between zoning adjustment boards in its five municipalities, which adopted uniform rules of procedure and agreed to friendly conferences when proposed zoning changes affect property contiguous to municipal boundaries.

It furnished the five municipalities comparative statistics respecting cost of government, and brought finance officers of the community together in friendly conference.

It organized Christmas street lighting and decoration for the benefit of merchants, and suppressed extensive program advertising solicitation because of the lack of benefit to business people.

It carried on placement activities, and out of a total of 1,139 applications for employment placed 320.

It organized the motor dealers in a separate division, and arranged monthly meetings for their conference on trade practices.

PLANS FOR FUTURE EFFECTIVE WORK

During the current year the Chamber will develop the relationship of the community to the regional plan of the metropolitan area; it will create a fund of $90,000 for a three-year campaign of community advertising to "Sell the Community to Itself" and attract a selected group of new residents to add to its high-class cultural atmosphere; it plans a three-day music festival to be participated in by the various musical organizations of the community to take place in 1931.

It is organizing a Woman's Division to capitalize the ability and potential energy available among many community-minded women in the five municipalities; and plans development of local sentiment looking towards the construction of a community auditorium capable of meeting the widely diversified needs of a community devoted to esthetic interests in an unusual degree.

The main purpose of the Chamber of Commerce and Civics of the Oranges and Maplewood has been summarized by our recently elected president, William J. Orchard, as follows:

"The outstanding object of this organization during the present year, as it has been during the past five years, and, as I see it, as long as the organization is in existence, is to make these five communities of Orange, East Orange, West Orange, South Orange and Maplewood think as one community on things in which they are all interested. I have in mind such things as major state and county projects, transportation, philanthropy, planning, zoning, state and county highways and the like. The value of the Chamber of Commerce and Civics of these communities has been demonstrated beyond all question. The fear that was at first expressed, that its organization was but a move toward the consolidation of the five communities into one political government, has vanished with the demonstration that in civic affairs of joint interest we can work together and accomplish far more than if we work alone. We have proved that, just as through the Welfare Federation of the Oranges and Maplewood we can work as a unit in raising and distributing the funds necessary for the operation of our welfare agencies, so in matters pertaining to commercial and civic interests we can work as a unit through the Chamber of Commerce and Civics.

"And so, I place as first in the objectives of this organization for the year 1930-31, the furtherance of creating a joint community consciousness between the five municipalities."

A. EDMUND WILLIAMSON,
Executive Secretary.

Congress Gives Great Aid to Park Development in Federal City Region

THE Cramton-Capper George Washington Memorial Parkway bill became a law when the President signed the bill on May 29. Its passage was one of the outstanding events in the history of the National Capital.

The bill provides for a method of financing the acquisition of an extensive park system recommended by the National Capital Park and Planning Commission. The measure is divided into three parts. It provides Treasury advances of $16,000,000 for the purchase of the entire inner park and playground system of the District of Columbia, to be repaid from the District budget at the rate of $1,000,000 a year without interest for sixteen years, and should enable the National Capital Park and Planning Commission to purchase the desired lands at something near present worth. At present the Commission is obliged to see property advance in value at an average rate of 10 per cent a year without having the funds in hand to purchase more than a small fraction of the system.

The measure provides also that the Federal Government shall contribute $1,500,000 toward the purchase of park extensions along Rock Creek and other Maryland streams and will advance such part of $3,000,000 as is needed on agreement with the Maryland National Capital Park and Planning Commission that the amount will be repaid within eight years.

Fifty Miles of Waterfront Parkway

But perhaps the most ambitious project in the new law is the acquisition of both shores of the Potomac from Mount Vernon to a point above Great Falls, which would give to the Federal City more than fifty miles of waterfront parkway. The Federal Government for this purpose makes available $7,500,000, to be matched by a similar sum from the states of Maryland and Virginia, political subdivisions thereof, or other responsible sources. Treasury advances without interest will be made for one-half the entire purchase on proper agreements with the states of Maryland and Virginia that the money will be repaid. There is thus appropriated outright under certain conditions $9,000,000 for the outer park system, to be matched by $10,500,000 for which Treasury advances may be made. In addition, Treasury advances of $16,000,000 would be repaid out of funds to which the Federal Government contributes a part (since Congress now appropriates $9,000,000 annually towards the District of Columbia budget).

The early purchase of park lands within the District and the further extensions of stream valleys into Maryland seem fairly well assured under the bill. The principal problem before the authorities is how to secure adequate commitments for $7,500,00 from Maryland and Virginia or others in order to claim the outright appropriation of $7,500,000 from Federal funds.

Within the next few years, ways and means should be found to claim the full benefit of the appropriation authorized by the Cramton bill, and the people of the United States should have a park setting for their National Capital which will make it one of the outstanding capitals of the world. The Federal City Committees of the American Civic Association are glad to have aided in the legislation already enacted, and will continue to cooperate in this movement which promises to have such a far-reaching effect on the development of the Federal City Region.

HARLEAN JAMES,
Executive Secretary, American Civic Association.

Nation-wide Program of Rebuilding Slum Districts

THE expenditure of many billions of dollars during the next decade in the rebuilding of slum districts in the cities and towns of the United States, and in the rehabilitation of such sub-standard structures as are worth saving, is urged in a report released June 1 of a special committee of the American Construction Council, of New York. Such a nation-wide program, it is pointed out, would give employment to many thousands of workers in building and allied lines, which, spread over a ten-year period, should contribute very substantially to the maintenance of the nation's prosperity.

The committee also suggests that:

"In addition to the more strictly economic benefits in stabilizing the construction industry itself and business generally, the social aspects for the promotion of health, recreation and living comfort, as well as eliminating breeding-places of crime, are of prime importance.

"Proper state cooperation and aid must be provided, which usually can be found to take the form of permissive legislation and sympathetic support by the state, i.e., necessary legal power for proper condemnation proceedings with due recognition of property rights, and also, perhaps, relief from taxation over a limited term of years for non-speculative housing projects in these districts; also, necessary zoning laws and building codes should be given the proper legislative action.

"Proper aid on the part of municipalities is also necessary, including permissive action with respect to zoning and building codes and acquisition of land under proper terms and conditions, as well as the active and wholehearted support of municipal authorities and their cooperation in working out a constructive local plan."

In issuing its committee report, the American Construction Council states that it fully recognizes that the rebuilding of slum and semi-slum districts presents certain difficulties, "but it is believed that the initiative and statesmanship so characteristic of American traditions and business enterprise can find a reasonable solution, if national stimulus combined with local effort is given proper applications," and the Council announces that it expects to devote its fullest energies in a cooperative movement directed toward the solution of this problem.

New Jersey to Develop Model 24-Mile Highway

Setback Legislation Along Highways Also Sought

ONE of the most important pieces of roadside landscape design yet to be undertaken was made possible when, recently, State Highway Commissioner Abraham Jelin of New Jersey gave official approval to proposals for converting the 24-mile stretch of Brunswick Pike between New Brunswick and Trenton into a model thoroughfare, as advocated by numerous civic organizations. Commissioner Jelin simultaneously authorized an expenditure of $30,000 for trees and shrubs to be used in roadside planting work. This planting, according to present plans, will be done by inmates of the Rahway Reformatory under direction of a landscape architect. The State Agricultural College, because of the importance to the whole nation of this stretch of highway, has signified its willingness to cooperate in the development work through the agricultural experiment station to the extent of conducting an educational campaign looking to the effective cooperation of adjacent property owners.

Mr. Jelin has presented, and the Commission has approved, a resolution which urges enactment by the State Legislature of regulations compelling property owners, not only along this thoroughfare, but on similar highways throughout the state, to observe setback lines for all future building. The Commissioner has also given consideration to recommendation of the State Federation of Women's Clubs for more control over the number and character of roadside gas stations permitted to be erected.

In describing the undertaking for THE AMERICAN CITY, the Commissioner writes: "We hope to have all our expectations for the Brunswick Pike fulfilled. The right-of-way of this thoroughfare is 100 feet wide with 60 feet reserved for roadway lanes. This was originally a surveyed road, as contrasted with the winding Indian trails which were elsewhere later developed into highways. It is the longest straight road in New Jersey, and is without a single turn for 22 miles."

AIRPORTS AND AVIATION

A Monthly Department on Aeronautical Activities of Municipal Interest
Conducted by ARCHIBALD BLACK, President, Black & Bigelow, Inc., Air Transport Engineers

City Planning Conference

CITY planners were among the earliest to give consideration to the technical phases of airports, and it therefore seems only natural that the twenty-third annual National Conference on City Planning at Denver, Colo., June 23-26, should have included in its program two papers on airports. These were discussions of "Airports and the City Plan," by Major Clarence M. Young, Assistant Secretary of Commerce for Aeronautics, and by Henry V. Hubbard, Director, School of City Planning, Harvard University.*

Joint Airport Committee

THE technical resources of the American Engineering Council, the American Road Builders' Association and the Aeronautics Branch of the Department of Commerce, so far as they relate to airport engineering and construction, have joined in one group to undertake the solution of the problems involved in one of the most urgent needs of airport development and air transportation—adequate drainage and surfacing for airports. The three organizations have designated representatives to serve on a committee organized by the Assistant Secretary of Commerce for Aeronautics, and known as the Committee on Airport Drainage and Surfacing, which will undertake at once a comprehensive and thorough study of the problems involved. The Committee is under the chairmanship of Harry H. Blee, Director of Aeronautic Development, Department of Commerce, the other members being: A. P. Taliaferro, Jr., and John E. Sommers, to represent the Department of Commerce; William A. VanDuzer, C. N. Conner, Colonel C. E. Myers, Henry H. Wilson and Charles M. Upham, representing the American Road Builders' Association; and W. W. Horner, Archibald Black, Perry A. Fellows, C. A. Hogentogler, and James H. Polhemus, for the American Engineering Council.

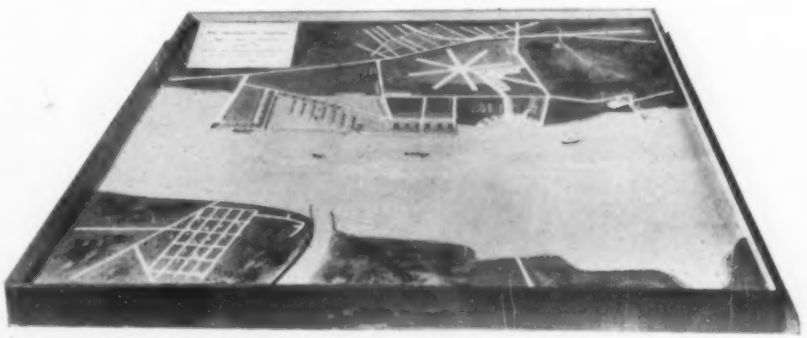
The Zeppelin Flight

PERHAPS the greatest tribute that can be applied to the recent flight of the Graf Zeppelin is to say that it lacked the news value of the earlier flights. This trip, starting from Friedrichshafen on Sunday, May 18, carried the Graf Zep down the coast of Africa and across the South Atlantic to Rio de Janeiro, whence it traveled northward to Lakehurst, N. J., and thence back across the North Atlantic to its starting point. This entire trip was made without incident, adhering quite closely to the schedule mapped out, the very lack of unusual events serving to demonstrate the commercial value of this form of transportation. The trip was made successfully, despite the fact that severe gales were encountered in certain areas along the route.

*An excerpt from Professor Hubbard's paper will be published in the July number.

Hog Island Airport

THE negotiations which have been under way for the past few years between the city of Philadelphia and the United States Government regarding the transfer of Hog Island to the former have finally been completed and the sales agreement signed. Director Murdoch of the Department of Public Works announced that he was prepared to ask bids immediately on the 4 million cubic yards of fill required to develop the Hog Island site. As a part of the industrial development of this area, the city of Philadelphia plans the construction of an airport which should rank as one of the very finest and best-equipped in the United States. The area to be developed for this purpose is to be raised to grade by the use of hydraulic fill which will be pumped from the bed of the Delaware River.



MODEL OF THE PHILADELPHIA AIR-RAIL-MARINE TERMINAL TO BE DEVELOPED AT HOG ISLAND

Are We Really Behind?

UNDER the above head, a recent issue of the *Boston Evening Transcript* repeats the following interesting comment of the Civic Bureau of the Boston Chamber of Commerce:

"A generally accepted belief is that the United States lags behind Europe in air passenger travel. But notice these comparisons: In February, while 1,358 were arriving and departing from London's huge airport at Croydon, 7,373 flew in and out of the airport at Tulsa, Okla. While 1,850 arrived at or departed from Le Bourget, the Paris airport, 3,136 came in or out of the Chicago airport. While Templehof, Berlin, was host to 658, Boston was host to 770. European air lines have been carrying passengers for ten years; American lines are very recent. Paris and Berlin are great centers where many lines converge and a passenger on a through trip would be counted twice. Boston, by comparison, has one line to New York. Also, it would be noted that Berlin has a population of over four million, while Metropolitan Boston has less than two million."

Civil Aviation Accidents

THE Department of Commerce report on civil aviation accidents for the last six months of 1929 shows further improvement as reflected in the increased number of miles flown for each accident, in comparison with the same period in the previous year. The statement issued shows a total of 78,940,161 airplane miles flown by civil aircraft in the United States between July and December, 1929, including both air transport and miscellaneous flying and representing an increase of about 25,000,000 miles over the same period in 1928. In the 1929 period, 15,940,161 airplane miles were flown in scheduled air transport operations and 15 fatal accidents occurred, the mileage for each fatal accident being, therefore, 1,062,677, as compared with the same period in the previous year where only 884,120 airplane miles were flown per fatal accident. In the miscellaneous flying operations, the same substantial improvement was not shown, there being actually a small decrease in the number of miles flown per fatal accident. The causes of these accidents were divided into four major classifications of personnel, power-plant failures, airplane failures and miscellaneous, in addition to the fifth category covering undetermined or doubtful causes. By far the largest percentage of accidents was attributed to personnel, the total being 55.75 per cent. The next largest was charged to power-plant failures, amounting to 18.95 per cent, and airplane structural failures were charged with 11.26 per cent and miscellaneous other causes with 8.47 per cent. Copies of the complete report on analyses of accidents are available without charge from the Aeronautics

Branch of the Department of Commerce at Washington.*

The Railroad's Reply to Aviation

THE *New York Herald Tribune* recently had a story emanating from an official of the Pennsylvania Railroad and carrying considerable significance. This brief statement indicated that the Pennsylvania is giving serious consideration to a substantial increase in the present speed of its high-class passenger trains between New York and Chicago. Electrification plans are being worked out which, it is said, will be carried into effect within the next five or six years. The New York and Philadelphia divisions of the road are already being prepared for electrification. When these changes are made, it is indicated that as much as six hours may be cut from the running time between New York and Chicago, bringing the two cities fourteen hours apart by rail and necessitating train speeds of as much as 90 miles per hour for the purpose of meeting the competition of the airplane services which are already attracting a substantial volume of passengers on certain lines throughout the country. This announcement of the Pennsylvania Railroad is doubly significant, in view of the prior announcement by Boeing Air Transport of its plan to place in operation high-speed airplane passenger services between the same two cities. It has been known for years that railroads could substantially increase their operating speeds, but the general feeling has been that the cost of such a change would be prohibitive.

* See also the comparison of "Automobile Deaths and Aviation Accidents," on page 117 of this issue.

Liability of Municipal Airports

CITY officials will be interested in the case of *Mobile v. Lartigue*, reported in the *United States Daily* earlier in the year, in which the owner of land adjacent to the Mobile municipal airport brought action against the city for damage to his crops resulting from an overflow of water from ditches used to drain the airport. The Alabama Court of Appeals held that the city acts in its corporate capacity as distinct from its governmental capacity in operating an airport and is therefore liable for damage resulting from the negligent performance of work by its agents or employees. The Court pointed out that an airport forming part of the city's transportation facilities bears a close analogy to the work done by it in the construction and maintenance of streets.

Glider Developments

THE Department of Commerce Aeronautics Branch has had under consideration for the past few months the question of altering its licensing requirements to cover gliders, and on June 16 announced the formulation of such regulations. These provide that any glider built prior to October 1, 1930, regardless of design and manufacture will be considered eligible for licensing by the Department. After that date, however, other gliders coming within the following classes will be considered eligible for license:

1. Gliders manufactured under Approved Type Certificates. This corresponds to the present procedure involving the licensing of airplanes which are built under Approved Type Certificates.

2. Gliders constructed by anyone, provided they are built in accordance with specifications and design previously approved by the Department of Commerce.

3. Gliders not manufactured under Approved Type Certificates, but which meet the requirements for such a certificate. The foregoing classes become effective immediately, and applications for glider licenses in accordance with their provisions will be accepted by the Department of Commerce. Major Young announced that he believes the policy of the Department with respect to the licensing of gliders is very liberal and should not handicap glider development in the United States. This extension of the regulations is made under the Air Commerce Act of 1928, which requires the Department to provide for the licensing of all aircraft and to promulgate regulations governing their airworthiness.

Air Sickness

THE clipsheet of the Boeing System publishes an interesting comment on the question of air sickness, a check of its Chicago-San Francisco and Seattle-Los Angeles routes having shown that less than eight per cent of the passengers were affected by occasional rough air—which is stated to be less than the percentage experienced in making ocean voyages. Investigations of the same subject made by others indicated that while air sickness might be accounted for by a number of causes, it was most frequently due to mental distress on the part of inexperienced passengers, although those accustomed to air travel were occasionally affected in exceptionally bad weather or after having partaken of indigestible food. It was also found by some other investigators that skillful piloting can eliminate much of the "bumpiness" often encountered in gusty air.

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THE CHICAGO MUNICIPAL AIRPORT IS ONE OF THE MOST ACTIVE IN THE COUNTRY

THE MONTH IN PUBLIC HEALTH

Conducted by JAMES A. TOBEY, Dr. P. H.

Summer Camps

NOW that the season for summer camps is happily upon us, innumerable boys and girls and many adults are departing around the first of July for thousands of camps. Many persons have already gone to the woods, and the exodus will continue throughout the season. The opportunity to spend a healthful period in the great outdoors is a fortunate one, provided, of course, it is really healthful. Without being hypochondriac about it, attention should be paid to the sanitary features of a camp when one is to be selected.

Among the hygienic requirements of a camp are that it should be on a well-drained site, away from mosquito-breeding swamps, with plenty of sunshine available. There should be a good supply of pure water, and all sewage and waste must be disposed of in a satisfactory manner. Cleanliness should be one of the first prerequisites. Swimming pools should be free from contamination, and every camper should know how to swim.

Good food is of course essential at a camp, as it is at all times. The milk supply is particularly important and should be clean and safe. If a properly pasteurized supply is not available, campers should use the canned powdered or evaporated milks. Food handlers should be free from disease, as shown by medical examinations.

Persons going to camps will be wise to be inoculated against typhoid fever. Children should of course have been vaccinated and immunized against diphtheria. Every camp of a commercial nature ought to be provided with, or have in its proximity, medical aid and nursing care. Minor accidents and illnesses are likely to occur in even the best regulated camps, and proper attention, given early, is essential.

According to Dr. Shirley W. Wynne, Health Commissioner of New York City, who gave a radio talk on this subject on May 21, 1930, the camp movement has so grown since its inception in 1881 that it is now estimated that 200,000 men and women in this country devote each summer to camp work with boys and girls. One of the first thoughts of each of them should be the continuous good health of their valuable charges.

How Sidney, Ohio, Won the Health Prize

THE public health accomplishments which won for Sidney, Ohio, the award in Class V of the Interchamber Health Conservation Contest for 1929 have been outlined by Charles O. Guy, Secretary of the Chamber of Commerce of this town of 9,500 population, as follows:

1. Health examination of all city food handlers, twice yearly
2. Complete pasteurization of all milk sold within the city
3. All cattle tuberculin tested
4. Children 100 per cent vaccinated against smallpox
5. 65 per cent of the children immunized against diphtheria
6. Reduction of correctable defects through Blue Ribbon work
7. Low mortality rate of children under 1 year of age
8. Extremely low mortality of children of all ages from communicable diseases
9. Progressive work in the eradication of T. B. through chest clinics and greater number of cases taken care of in hospitals
10. Pure water-supply and sewage control

The award, a bronze plaque, is the direct result of the cooperation manifest between the Sidney Chamber of Commerce, the County Health Department, and the citizens of Sidney and Shelby County. Without the active participation of each of these factors, the whole program would have failed.

The thorough program undertaken by the Health Department, and backed to the limit by the energetic citizens of this splendid city, shows plainly what can be done in the small community. The relation of health to the community is so self-evident and the benefits derived are so lasting that it behooves every community to get behind the project wholeheartedly in all of its aspects.

"Sidney," says Mr. Guy, "prides itself on its ability to promote worth-while projects and to carry them to successful conclusion. The keynote of its success in this respect is the unselfish working together of the various civic organizations."

Let There Be Sight

A RECORD of steady achievements in the campaign to conserve vision is outlined by Lewis H. Carris in the fifteenth annual report of the National Society for the Prevention of Blindness, issued in May with the captivating title, "Let There Be Sight."

A number of activities directed at preservation of the eyesight of children trace the interest of the Society from the general health of the expectant mother, even before the baby's birth, on through successive stages of the child's life until it has been given every opportunity for clear vision which modern science affords. The use of prophylactic drops in the eyes of babies at birth, in order to prevent ophthalmia neonatorum, usually called "babies' sore eyes," is now required in most states.

An increase of 45 "sight-saving classes" within the last year is noted. There are now 350 of these classes for the education of children with seriously defective vision in 95 cities of 21 states. Through the use of large-type books, movable desks, ideal lighting, and special teaching methods, children with little vision are not only given the same sort of education that children with full vision receive, but are taught how to conserve their remaining sight. The Society estimates that approximately 5,000 such classes are needed in the United States. To train teachers for this work, special courses will be given in the summer months at Columbia University, the University of Chicago, the University of Cincinnati, and the State Teachers' College in Buffalo, N. Y.

Trachoma, the disease of the eyelids which leads to blindness, continues to baffle the best minds of opthalmology, the report discloses. Renewed impetus to research into the mysteries enshrouding it was given through a five-year program of investigation started recently by the Medical School of Washington University, St. Louis, and financed by the Commonwealth Fund. In addition to cooperation with the Federal trachoma clinic at Rolla, Mo., during 1929, the National Society for the Prevention of Blindness assisted several other agencies in a study of the incidence of trachoma among the Chippewa Indians of Minnesota.

Snake Bite

FROM April to November snake bite becomes one of the possible summer health hazards. Several years ago it was estimated by an eminent herpetologist, Mr. Ditmars, that there are about 1,000 poisonings from snake bite in this country every year, although only about 10 per cent result in fatalities.

The first reliable data on the actual number of poisonings by snakes is for the year 1928 and was collected by Dr. R. H. Hutchinson, of the Antivenin Institute of America, according to an interesting editorial in the *Journal of Laboratory and Clinical Medicine* for May, 1930. For that year there are reports of 607 cases of such poisonings in continental United States, but only 458 of them are capable of being analyzed.

Fortunately for campers and hikers, there are only a few poisonous species of snakes in our country. Of these, the copperhead is apparently the most dangerous, as it was responsible for 171 poisonings in 1928. The Texas rattlesnake comes next, with 100 cases. Among other poisonous snakes are the cotton-mouth moccasin, the ground rattler, various other rattlesnakes, and the coral snake. The last named seldom bites a human being, but the others are less reticent in this matter.

If you are bitten by a poisonous snake, the most valuable remedy is antivenin, a

serum made from a combination of the various snake poisons. In addition to this treatment, there are, according to a citation to Major R. E. Scott in this editorial, only three proper first-aid measures. These are the immediate application of a tourniquet above the bite, the making of an incision over the bite sufficient to allow escape of blood serum, and, finally, suction to withdraw the free venom at the site of the bite. In the 607 cases collected by Dr. Hutchinson there were 18 deaths, or 10 per cent, of 175 cases where antivenin was not used, and only 13 deaths, or 3 per cent, among 433 cases in which the serum was administered. The Texas rattler was the chief cause of death in the small group of patients who died after the antivenin treatment was given.

All persons who go camping, hunting, or roaming should familiarize themselves with the appearance and habits of poisonous snakes, and certainly with the scientific methods of treatment in case of bites. As in all public health measures, it is more simple to prevent the bite, if possible, than to be forced to attempt to cure it. The symptoms are exceedingly unpleasant and there is always the possibility of being among the 10 per cent who do not recover.

A Mayor Speaks on Public Health

WHEN Mayor Charles H. Martens of East Orange, N. J., accepted the award of the Chamber of Commerce of the United States which had been won by his city in the 50,000 to 100,000 population class in the inter-chamber health contest, he took occasion to state that the Health Department had always had the hearty support of the administration and had never been hampered by politics. This city executive praised the local health officer, Frank J. Osborne, and outlined some of the methods by which public health is protected and promoted in East Orange. The interest of mayors and city officials in health work and their support and appreciation is always a matter for gratification.

The Goal of Public Health Administration

"IT has been demonstrated repeatedly," says an editorial in the *New England Journal of Medicine* for May 8, 1930, "that humanity is indebted to public health workers for many of the blessings now enjoyed. They have organized the combatants in the warfare against disease and are carrying on educational programs which could never have been financed by practitioners. They have led in the fields of legislation in showing the futility of some schemes and explaining wherein dangers to health lie and how to avoid the pitfalls."

Public health has been defined by Professor I. V. Hiscock of Yale as "that which develops and conserves health and lengthens life by means of community activities organized to secure environmental sanitation, communicable-disease control, early discovery and preventive treatment of disease, and the education of the public in the principles of healthful living." In order to comply with this definition, Dr. Allan J. McLaughlin has recently pointed out in *Public Health Reports* (May 23, 1930) that there are three urgent problems which must be solved by modern public health administration.

The first of these is how to make available adequate medical, surgical, and preventive advice and treatment to all citizens at a cost within their ability to pay. The second is: "Can more adequate and effective teaching of applied preventive medicine and hygiene be included in the medical school curriculum?" The third is whether more adequate and effective teaching of applied child hygiene can be included in the curriculum of state teachers' colleges and normal schools?

In the solution of these problems, the combined efforts of health officials, unofficial health agencies, the organized medical profession, and educational authorities are necessary, in the opinion of Dr. McLaughlin, a former president of the American Public Health Association.

An able discussion of the rôle of the official health agency was presented before the City Managers' Association last November by W. F. Walker, Dr. P. H., whose paper has recently been issued as a reprint from *Public Management* for March, 1930. A copy of this article, entitled "Government Responsibility in the Field of Public Health," may be obtained from the committee on Administrative Practice of the American Public Health Association, 370 Seventh Avenue, New York.

Some of the problems of modern public health were eloquently expressed by Dr. William H. Welch in his response at the ceremonies in honor of his eightieth birthday on April 8, 1930. "While public health is the foundation of the happiness and prosperity of the people," said Dr. Welch, "and its promotion is recognized as an important function of government, how wide is the gap between what is achieved and what might be realized; how inadequate is the understanding of the public concerning the means adapted to secure the best results; how small the attractions offered to those entering or who might desire to enter careers in public health, through lack of suitable financial recompense, or security of tenure of office, or opportunities for promotion, of standards for eligibility based upon special training and experience, and of funds made available for the public promotion of health."

Prizes for Public Health Standards in East Texas Schools

By GRACE K. PLANT

RECOGNIZING the vital part which public health plays in community progress, the East Texas Chamber of Commerce and the State Health Department of Texas initiated a public health contest among the public schools of East Texas. Greater happiness and efficiency for the individual and an improved social economy are the benefits hoped for.

The contest began February 15. The first school to attain a score of 100 per cent in accordance with prescribed health standards will receive a completely equipped radio receiving set of a nationally famous make (Majestic Model 91), offered by the Radio Equipment Company of Texas, Dallas. In this connection it is worthy of note that Texas schools were among the earliest to utilize the radio as a medium of education in the public schools and that the very first lesson put on the air dealt with public health.

The second school to reach a rating of 100 per cent will win a new edition of a well-known pictorial encyclopedia in 12 volumes (New World Book), contributed by the C. R. Jackson Company, of Dallas.

The third prize is $25 in cash, donated by the Public Health Department of the East Texas Chamber of Commerce.

The score card of health standards was drawn up by Miss Celia Moore, R. N., of the Bureau of Child Hygiene, Texas State Department of Health, and it reflects the practical experience of that body as well as the principles laid down by leading public health authorities.

Periodical examinations of sanitary facilities on school premises are being made by members of the Parent-Teacher Associations.

Here is the score card:

1.	Regular inspection of toilets, drinking fountains, grounds and buildings	4%
2.	First aid kit, with fever thermometer	2%
3.	Cot in rest room	2%
4.	Facilities for washing hands	10%
5.	Wall thermometers in each room	4%
6.	Scales for weighing children monthly	2%
7.	Daily health inspection	10%
8.	Calisthenics ten minutes daily	10%
9.	Hot lunches	10%
10.	Mid-morning milk for children 10% or more under weight	10%
11.	Eating lunches indoors	2%
12.	Yearly physical and dental examinations of all pupils by doctors and dentists	4%
13.	Conducting of "Health Button Contest"	10%
14.	Placing Health Bulletin board in hallway	2%
15.	Smallpox vaccination for all ages; immunization against diphtheria for all under 12 years of age	10%
16.	Examination of water-supply twice a year by laboratory	2%
17.	Yearly health examination of teachers	2%
18.	A few recommended books on health in library	2%
19.	Subscription to *Hygeia*	2%
	Total	100%

THE TAXPAYER'S DOLLAR

A Monthly Department of Budgeting, Assessment, Taxation, Accounting and Other Phases of Municipal Finance
Conducted by A. E. BUCK, National Institute of Public Administration, New York

San Francisco's Debt Limit a Moot Question

WILLIAM H. NANRY, Director of the San Francisco Bureau of Governmental Research, raises the question whether that city's debt limit, under present laws, is $44,000,000 or $91,000,000, or whether it is $59,000,000 or $106,000,000. This wide range between the lower and upper figures seems to be due to a mix-up in the legislation applicable to the city. It is a question whether the personal property is, or is not, included in arriving at the total roll of the city and county which is the basis for computing the 12 per cent debt limit. If it is not included, the limit at the present time is about $97,000,000, from which must be deducted the outstanding bonds amounting to $53,000,000, leaving a leeway of $44,000,000. If the personal property is included, the limit is about $144,000,000, or a present leeway of about $91,000,000. Another question is whether the outstanding school bonds should, or should not, be deducted in arriving at the present leeway. In the figures just given above, these bonds have been deducted. If they are not deducted, then the present leeway in the first case is $59,000,000 and in the second, $106,000,000.

Mr. Nanry points out that if the leeway for new debt is fixed at either $44,000,000 or $59,000,000, it will not be sufficient to cover the $60,000,000 proposed power bond issue which is to be submitted to the voters at the August primary. "Although a bonded debt limitation," he says, "does not lie against bonds when they are authorized but only when they are sold and thus become 'outstanding,' the point involved is nevertheless of great importance. It would be obviously unwise to work so closely to our bonded debt limit and leave little or no margin for other projects or necessities which may require bond-issue financing." He urges that the questions raised be settled immediately by a legal interpretation.

Schenectady, Duluth and Kansas City Interested in Long-Time Planning

THE budding and flowering season appears to bring with it new proposals for long-time financial programs. This time Schenectady, N. Y., Duluth, Minn., and Kansas City, Mo., are showing interest in such programs.

A long-time financial and improvement program for Schenectady was published in April by the capital budget commission of that city. This commission used the staff of the Schenectady Bureau of Municipal Research in the preparation of the program. As a result the cost of working out the program for a period of ten years was quite moderate—a little over $4,000. As published, the program is presented in a pamphlet of 67 pages which is replete with maps, charts, and tabular matter. All important phases of the city's growth seem to have been treated, including the effect of growing satellites on the financial and physical problems of the city proper.*

A capital improvement program for Duluth has been proposed and outlined in a general way by Robert Goodrich, Secretary of the Taxpayers' League of St. Louis County. Mr. Goodrich urges that the city authorities, before they proceed further with the various municipal improvements, prepare and adopt a long-term program. He says that such a program should show the specific improvements to be undertaken, the estimated cost, the means of financing each improvement, and the year that each project is to be undertaken.

The Kansas City Public Service Institute has outlined in a recent bulletin the "essentials of a ten-year plan or capital budget" for that city. It says that all the local governments should be included in such a program and that their resources should be carefully weighed against the proposals. The cost of the improvements should be based upon careful estimates and the improvements should be scheduled in the order of importance and need. There should be established, the Institute says, a procedure for the annual review and revision of the program, whereupon the funds for the improvements should be voted. Official bodies, with unofficial assistance, should bear the responsibility for preparing, submitting and carrying out the program.

A Revision of the Method of Collecting Delinquent Taxes in New York

A LAW recently passed in New York permits cities to abandon their present method of selling the lands against which taxes are in arrears and elect to sell the tax liens instead. Under this law the purchaser of a tax lien obtains what is for all practical purposes a first mortgage on the land upon default by the owner. He can then foreclose the lien in the courts and obtain a title to the property.

In discussing this law before the Conference of Mayors and other Municipal Officials, Mayor John B. Harris of Watertown, New York, said: ". . . the sale of a tax lien is more satisfactory both to the municipality and to the tax sale purchaser than is the sale of the land. The municipality benefits because of the increase in the number of purchasers, which insures the collection of the taxes, and the purchaser benefits because he is in a position, if the land is not redeemed, to obtain a good title thereto by foreclosure, or at least to recover back the amount of his investment with the statutory additions thereto. The principal objection to making the tax lien plan statewide is that in many instances the amounts of taxes for which lands are sold are extremely small and the lands are not of sufficient value to warrant the expense of a foreclosure proceeding. A happy medium seems to be the optional plan whereby the owner may choose between taking a deed or foreclosing his tax lien; such plan is incorporated in the provisions of the new law."

Prior to the passage of this law, New York City, White Plains, and Yonkers exercised the right to sell tax liens, but the methods of collecting delinquent taxes in the other New York cities are termed "ineffective and archaic" by Mayor Harris. Under these methods, clear titles to properties sold for delinquent taxes cannot be established; cities either lose much revenue or are handicapped by long delays in selling these properties. So-called "tax sharks" thrive as a result; they purchase the more attractive parcels and leave the others to be taken over by the cities.

A Striking Example of Fiscal Supervision of Local Governmental Units

THE 1930 report of the Tax Supervising and Conservation Commission of Multnomah County, Ore., has just come to my attention. This Commission was created in 1921 to supervise the budgets of the various governmental units within the county, including the city of Portland. It consists of three members appointed by the Governor. The Commission selects an executive secretary who directs the technical and office work. For several years, this position was filled by C. C. Ludwig, now City Manager of Albert Lea, Minn. His successor is R. C. Flanders. Under Mr. Ludwig's direction the work of the Commission took definite shape and assumed a permanent status. Mr. Flanders is now carrying on successfully along the lines marked out by his predecessor.

The most recent report contains a summary of the ninth year of the Commission's work and in addition thereto the 1930 annual budgets of the various governmental units. The Commission reduced the requested appropriations of these units for 1930 by $126,930.40, while the requested tax levies were reduced $259,427.22. These reductions added to the accumulated reductions of the eight previous years that the Commission has been functioning

* See items on page 151 of this issue regarding subsequent developments.

make an aggregate total reduction of $2,554,342.86 in appropriations and $3,890,297.02 in tax levies.

The report points out that there are substantial results of the Commission's work other than the money reductions. The most important of these grows out of the fact that the existence of the Commission has had a deterrent effect upon extravagant expenditures. Says the report: "The scrutiny of the budgets of spending officers by an agency which does not spend the money is fundamentally sound and compels greater care in the preparation of the budget." Progress is being made in accounting control, in connection with which the Commission enjoys the full cooperation of the different tax-levying bodies. The Commission is now making an effort to limit emergency funds to strictly emergency purposes, a thing that is difficult of accomplishment.

Serial Bonds Proposed for Philadelphia

THE Mayor's Committee on Municipal Finances, recently organized in Philadelphia, is considering the issuance in the future of serial bonds instead of sinking-fund bonds. This proposal has been made several times during the past five years, both by the Bureau of Municipal Research and by the Chamber of Commerce.

The Bureau says: "The main reasons for proposing serial bonds are their lower cost; their greater simplicity; the fact that their total cost and their annual cost are definitely known in advance, and are not subject to fluctuations in the rate of earnings of sinking-funds; the fact that with serial bonds all the risks, uncertainties, complications, and controversies concerning sinking-funds for such bonds are eliminated; and the fact that the city's debt structure and debt administration would be much simpler and much more understandable than with other forms of bonds."

The Bureau observes that many of the municipalities and states are now issuing only serial bonds. Of the twelve largest cities in the United States, the Bureau says that Philadelphia is the only one that does not issue such bonds. Most of these cities issue no other kind of bonds.

Dundee, Scotland, Issues a Unique Cost Report

WILLIAM AIKEN, City Chamberlain of Dundee, Scotland, has recently issued an interesting pamphlet containing the aggregate tabulations of departmental costs of the different trading and non-trading departments of his city government. In a recent letter to the Editor of THE AMERICAN CITY, Mr. Aiken says:

"We in Great Britain are somewhat behind some of the American cities in our methods of costing, but there is an awakening in the Old Country as to the importance of the values of unit costs. In this connection I may be permitted to send you a brochure which was issued by my department the other day, dealing with the unit costs of the various departments of the Dundee Corporation. This is the first publication of its kind, and I am hoping as the years go by to improve on this issue by an extension of other unital costs. This valuable work could not have been accomplished unless by a costing branch under a skilled cost accountant—a unique organization in municipal finance departments in this country."

Mr. Aiken is undoubtedly contributing very materially to the development of municipal costing in Great Britain. His work has been discussed most favorably by such English publications as *The Financial Circular, The Local Government Chronicle,* and *The Municipal Journal.* Those interested in the further development of municipal cost accounting in the United States will do well to follow the work of Mr. Aiken and his associates.

As we pointed out in the January issue of THE AMERICAN CITY, Mr. Aiken is a firm believer in the adaptation of the latest mechanical devices, such as the tabulating machine, to municipal costing. As someone has suggested, this may be "robot accountancy"—entirely lacking in the elements of sex appeal—but it gets accounting and statistical results immediately. Such results, after all, are what the active city administrator is looking for, even though they may come by way of "R. U. R." (Rossum's Universal Robots).

St. Louis Proposes Sale of Benefit Bills to Speed Civic Improvements

CITY officials of St. Louis have recently made an agreement with a local firm of investment bankers whereby the latter will buy from the city government, either through itself or through a finance corporation created for the purpose, $22,000,000 of benefit assessment bills in condemnation cases. The purpose of this move is to enable the city government to proceed much quicker than it might otherwise do in completing street openings and widenings and other improvements. This will make it possible to facilitate the entire program of condemnation work under the 1923 bond issue, permitting the city to go ahead with several important improvements that have been delayed for some time by lack of funds.

The general revenue surplus has not been sufficient for the city government to make advances against benefit assessments, and a $2,000,000 revolving fund for this purpose from the 1923 bond issue has been tied up in the Olive Street improvement and several lesser widening jobs. Under the present arrangement, it seems, the city is required to pay into court the total amount of damages awarded the property holders for the condemned property before it can take possession of any part of it. This lays upon the city government the initial financing of the entire project, before the benefit assessments are collected. While these assessments bear 6 per cent interest if not paid immediately, experience shows that they may run for several years before payment. This creates a serious situation from the standpoint of financing the improvements, hence the proposal to sell the benefit assessment bills.

The firm of investment bankers proposes to buy the benefit assessment bills at a 5 per cent discount. To offset this loss from discount, it is argued that the city government would be put in the immediate possession of sufficient capital to proceed with projects that have been delayed for a long time although greatly needed by the community. It is also maintained that the sale of these bills by the city, even at 95 cents on the dollar, would "relieve the contemplated improvements from an intolerable impediment and the city as a whole from a great obstacle to its advancement." "More than that," says the *St. Louis Globe-Democrat* editorially, "it would remedy the injustice to numerous property holders on the streets subject to improvement who have long suffered because of the uncertainty of their situation."

An ordinance providing for the transfer of benefit assessment bills now held by the city and amounting to about $22,000,000, has passed the Board of Aldermen and, as this item goes to press, is awaiting the Mayor's signature. If the plan is adopted, it will be interesting to see how it works cut. It ought to prove a valuable experiment in the method of financing local improvements under a long-term program, such as St. Louis adopted several years ago.

Lynchburg Reassesses Its Property

DURING this year the city of Lynchburg, Va., is conducting a reappraisal of its property, which is to become effective on January 1, 1931. R. W. B. Hart, City Manager of Lynchburg, writing in the *Virginia Municipal Review,* says that an appraisal company has been employed and has already completed a large part of the work. As soon as this company has finished its work, it will turn over to the city government complete maps in atlas form on a scale of one inch to one hundred feet, showing all dimensions of property, streets, and facilities; also a complete file of cards, arranged both alphabetically and numerically by lots, showing detailed information on buildings, with space reserved for keeping this information up to date for several years. A complete land book will also be supplied.

The local assessors will pass upon the final valuations in all instances after every property owner has been notified by card and given an opportunity to be heard in connection with the reassessment of his property. The final valuations will be arrived at only after exhaustive checks on sales, costs of buildings, and the consideration of all physical factors.

The city government is undertaking, in cooperation with the State Corporation Department, to check the valuation of the physical properties of public service agencies, the purpose being to place all real estate in the city on the same taxable basis. The general purpose of the reappraisal, says Mr. Hart, is not to increase the city's revenue, but to attain as far as possible the equalization of taxation.

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Newspaper's Comment Upon Municipal Audit Showing Irregularities Held Privileged and Not a Libel.—Suit by a city councilman against the publisher of a newspaper for libel, in stating that a check was paid out of a municipal fund to plaintiff without approval of the city council or filing of an invoice, was dismissed by the Missouri Supreme Court (*Davis v. Missourian Publishing Association*, 19 S. W. 2d, 650). In part, the Court said:

"The evidence shows that the certified public accountants were employed by the city to audit the books and accounts of the Water and Light Department, and that their report was addressed to the Mayor and City Council of the City of Columbia. The report thus became a matter of public concern and public interest, a quasi-public document so to speak, that gave the defendant the right to communicate it to others, provided defendant fairly and in good faith substantially quoted or epitomized its contents and meaning. . . . Conceding that the comment that the check for $403.20 paid plaintiff was not approved by the City Council, standing alone, was false, yet, when read in connection with the article in its entirety, we see nothing more in it than the thought that a technical irregularity exists relative to the Water and Light Department appropriation, and that, to obviate the irregularity and complete the records, it will be necessary for the council to regularly appropriate the funds. Even though we could say that the publication was intended as a criticism, yet, if it was such, it criticized the City Council rather than plaintiff. Taken in its entirety, the publication was a fair summary of a document of public interest, and was qualifiedly privileged."

City Held Powerless to Reimburse One Wounded by Lawbreaker While Aiding in Serving Legal Process.—A Pikeville, Ky., policeman, having a search warrant to execute, called upon Trivette, a citizen, to assist. In trouble that ensued on the premises searched, the owner and the policeman were killed and Trivette was severely injured. The City Council voted to reimburse Trivette for his medical, etc., expense, but a taxpayer successfully sued to enjoin the payment.

The Kentucky Court of Appeals decided (*Caudill v. Pinson*, 24 S. W. 2d, 938) that there was no legal liability on the part of the city for the injury, and that to make the payment would amount to a donation of public funds in violation of the Kentucky Constitution. The Constitution declares that "taxes shall be levied and collected for public purposes only." The following statement of the Court assumes the non-existence of a local statute entitling police officers, or their dependents, to awards for injuries received in the line of duty:

"It is inconceivable how it could be contended that a municipal peace officer could recover damages inflicted upon him in the discharge of his duties in the enforcement of a police regulation. Surely it could not be contended that the law violator who inflicted the injuries sustained any such relationship to the municipality as to render the latter liable for his wanton or malicious acts."

For Your Convenience

Important legal decisions involving municipalities, as reported in this department during 1929, are indexed and classified in the 1930 MUNICIPAL INDEX. This reference list, commencing on page 151 of the new INDEX, supplements lists appearing in the 1929 and 1928 volumes, and covering all decisions reported in this department since its inception in 1924.

By Dismissing an Appeal from a Condemnation Award, a City Would Not Prevent Adjudication of the Owner's Demand for an Increased Award.—Where a city appealed from a condemnation award made by commissioners, and the owner filed a cross-claim for an increased award in the county court to which the city had appealed, an adjudication of the cross-claim could not be thwarted by the city by dismissing the appeal and assenting to affirmance of the commissioners' award. (*City of Houston v. Susholtz*, 22 S. W. 2d, 537, decided by the Texas Court of Civil Appeals.) The Court said that the city's voluntary dismissal of the appeal would have amounted to a dismissal of the case altogether.

Compulsory Removal of Street-Railway Viaduct Is Within a City's Police Power.—Action by plaintiff city in requiring defendant railway company to demolish a viaduct used to carry its tracks above a railroad, where the viaduct had become unsafe, was upheld by the Louisiana Supreme Court in the case of *City of New Orleans v. New Orleans Public Service*, 123 So. 648. The Court said:

"In changing the crossing from an overhead to a grade crossing, it is fair to assume that the city will see that proper precautions will be taken to avoid accidents. By ordering the change made, the city is not depriving defendant of its property without due process of law, in violation of the Fourteenth Amendment of the Constitution of the United States, nor of section 2 of article 1 of the Constitution of this state, nor is the city impairing the obligation of defendant's contract with it, in violation of the Constitution of this state and that of the United States, for by ordering the removal defendant is legitimately exercising its police power, subject to which defendant holds its franchise."

Statute Empowering City to Extend Electric Transmission Line Beyond Limits Upheld.—In the case of *Holmes v. City of Fayetteville*, 150 S. E. 624, the North Carolina Supreme Court decided that plaintiff taxpayer was not entitled to enjoin the city from extending its electric transmission lines beyond the city limits. The Court held that a statute permitting a three-mile extension was valid. The city owns its transmission lines, but buys electric current from an electric power company. In the course of an extended opinion, the Court said:

"The Legislature has undoubted authority to confer upon cities and towns jurisdiction for sanitary and police purposes in territory contiguous to the corporation. . . . If a municipality owns and operates a water or lighting plant and has an excess of water or electricity beyond the requirements of the public, which is available for disposal, it may make a sale of such excess to outside consumers as an incident to the proper exercise of its legitimate powers. . . . The excess may be sold, although the city, instead of owning the plant, gets its supply by contract. . . .

"We think there can be no question as to the defendant's right to purchase electricity for its own use and for the use of its inhabitants. . . . It is equally clear that without legislative authority the defendant would not be permitted to extend its lines beyond the corporate limits for the purpose of selling electricity to non-residents of the city."

Without Legislative Authority, a Municipal Corporation Cannot Relieve Treasurer of Responsibility for Selection of Depository.—"The power of the board or council of a city to select a depository of the city's funds, and relieve the treasurer from liability for money lost, through insolvency of the depository, does not exist, except when done by grant of authority from the Legislature," declared the Missouri Supreme Court in the case of *Bragg City Special Road District v. Johnson*, 20 S. W. 2d, 22. The Court applied the rule to the affairs of a special road district, and held the Treasurer's surety liable for funds lost under such

circumstances. The opinion holds that the surety company on the Treasurer's bond was bound to know the limitations of the powers of the Board of Commissioners of the district and could not assert an estoppel against the district to hold the Treasurer and the surety liable because the Board had purported to authorize the Treasurer to deposit the district's funds where they were deposited.

City Held Liable for Injury Caused by Low Fire-Plug on Sidewalk.—In the case of *McFarland v. City of McCaysville*, 148 S. E. 421, the Georgia Court of Appeals said:

"Where the evidence for the plaintiff authorized the inference that the plaintiff was walking along the sidewalk at night, in company with another person, and had no occasion to be strictly mindful of whether the sidewalk contained an obstruction or not, and had no actual knowledge of the existence or location of the fire-plug in question [four inches in diameter and six inches high], never having noticed that any such object was located upon the sidewalk in that vicinity, and that while so using the sidewalk the plaintiff's foot came in contact with such obstruction, with the result that she tripped and fell, it cannot be said as a matter of law that the plaintiff's injury should be attributed to her own negligence, as the proximate cause, or that the consequences of the defendant's negligence could have been avoided by the exercise of ordinary care. And this is true notwithstanding the plaintiff may have been a resident of the city for several years, during the course of which she had at times traveled upon the identical sidewalk, and although upon the particular occasion there may have been lights in close proximity which afforded ample illumination for ordinary purposes."

Abutting Owner Held Liable for Injury to Traveler Due to Fall of Tree in Street Limits.—In the case of *Brown v. Milwaukee Terminal Railway Co.*, 227 N. W. 385, the Wisconsin Supreme Court held that defendant was not liable for injury to a traveler in a Milwaukee street, due to fall of a tree in the street. But, on reconsidering the question, that decision was reversed. (227 N. W. 385.) In the later opinion, the Court said:

"The ordinances of the city of Milwaukee regulating the planting and care of shrubs and trees in the public streets do not relieve the defendant of liability for the maintenance of a nuisance. They give the city the right to remove such a dead tree. But they in no way limit the power or affect the duty of the defendant to remove this dead tree which was clearly its property, although standing within the limits of the public street. . . .

"Assuming, without deciding, that such trees may constitute defects in streets, injury caused by such a tree may impose liability on the municipality, and also upon the owner of the tree who maintains such a nuisance. In such cases the person suffering injury may have a choice of remedies. In removing the menace of the dead tree, the lot owner is not performing any duty imposed upon the public. He is simply discharging the duty which the common law imposes upon him as the owner of a tree that has become a menace to the safety of those who traveled the street."

Ordinance Forbidding Exterior Advertising on Street Cars Adjudged Void.—An ordinance of defendant city purporting to forbid commercial advertising on the exterior of street cars is void, holds the California District Court of Appeal in the case of *Pacific Railways Advertising Co. v. City of Oakland*, 276 Pac. 628. It was further held that even if the complaining street-railway company had been without charter power to carry advertising, its doing so could not be questioned by the city, but only by the state. However, it was held that there was implied authority to carry such advertising, in view of custom throughout the country. And the city was held to be in a specially unfavorable position to challenge the right, in view of a provision in the ordinance permitting interior advertising. On the main point in the case, the Court said:

"It is manifest from a reading of the ordinance alone that what the Council did was to absolutely prohibit *all* frames and *all* advertising on the sides of street cars, rather than to regulate dangerous frames, signs, or devices and immoral or otherwise improper displays. And when the provisions of the ordinance are considered in the light of the evidence and findings, it is all the more obvious that when the ordinance was passed, no threat of public injury or danger existed (and none has developed since) which would warrant or justify the calling into play of an exercise of the police power in the broad and sweeping form which this ordinance takes."

A Thoroughfare Held a Public Highway Although not Formally Accepted as Such.—Where a township exercised jurisdiction over a street by installing lights, maintaining fire-plugs, sewers and the like, and the minutes show a vote to accept the street, then, although there is no further formal acceptance by ordinance, the action of the municipality is sufficient to constitute the thoroughfare a public highway of the municipality, and to require the township to keep the same in passable condition. (*Commonwealth v. Hanover Township*, 21 Pa. Munic. Law Rep. 85, decided by Court of Quarter Sessions, Luzerne County, Pa.)

Pennsylvania Municipalities Held Liable for Gasoline Tax.—The Attorney-General's Department in Pennsylvania recently rendered an opinion that the 1929 gasoline tax law of the state is not so worded as to exempt municipalities and other subdivisions of the state, although the federal and state governments are exempt. In part, the opinion reads (*In re: Exemptions from Liquid Fuel Taxes*, 21 Pa. Munic. Law Rep. 65):

"We are of the opinion that liquid fuels consumed by municipalities, counties, school districts, and other political subdivisions of Pennsylvania, are subject to tax. While all these political subdivisions are supported out of revenue raised by taxation, the sources of tax from which they derive their revenue are entirely different from the sources from which the Commonwealth derives its revenue; and, in any event, the proceeds of the collection of the tax on liquid fuels are not, under present legislation, intermingled with the general revenues of the Commonwealth, but are held separate and apart to be used exclusively for highway work.

"As already stated, in Act. No. 405, the Legislature expressly provided that 'the tax hereby imposed shall apply to all liquid fuels sold or used within this Commonwealth, excepting such transactions in interstate or foreign commerce as are not within the taxing power of the state.'

"The imposition of a tax upon liquid fuels sold to or consumed by a political subdivision of the state is within its taxing power; and we cannot find any jurisdiction for presuming that the Legislature, notwithstanding the all-inclusive statement quoted, intended to exempt from taxation liquid fuels used by municipalities, counties, school districts, and other political subdivisions."

Authority to Establish Public Markets Held Not to Sanction Grant of Private Rights in Streets.—In the Tacoma case of *Anderson v. Nichols*, 278 Pac. 161, the Washington Supreme Court held that municipal authority to operate a public market did not permit setting off parts of streets for use by private individuals in selling products usually sold at public markets. The Court said:

"We have not overlooked the argument made in this connection to the effect that the booths are not rented for profit, but only for a sufficient charge to cover the costs of maintenance, and that they are largely rented and used by farmers and gardeners who vend products of their own growing. But this is beside the question. Conceding this to be a correct picture of the situation, it does not show that the place is a public market. The use of the booths is confined to growers who are permitted to use them and are not open to every grower who may so desire—an essential to a public market.

"It would seem, however, that the city has gone beyond its power, even were it conceded that this was a public market, within the meaning of the statute. The control of the city over its streets is not absolute. Primarily, the streets are established as highways for the use of the general public, and the city is not authorized to change them from this primary use to another public use without compensation to those who are injuriously affected by the change."

City Held Liable for Change of Established Grade on Street Constituting Part of a Highway.—Where a street grade had been established and the city afterwards consented to a change under plans of the State Highway Commissioner, the city became liable to abutting property owners for damages resulting from the change, according to the decision of the Minnesota Supreme Court in the case of *Foss v. City of Montevideo*, 227 N. W. 357.

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Laws and Ordinances

KENTUCKY.—City Planning and Zoning Enabling Act, 1930.

NEVILLE, PA.—Ordinance, April 1, 1930.

ROCHESTER, PA.—Ordinance, December 30, 1930.

SPRINGFIELD, PA.—Ordinance, May 6, 1930.

NORTH PROVIDENCE, R. I.—Ordinance, 1930.

Cemeteries

CALIFORNIA.—*Masonic Cemetery Association v. Gamage*, 38 Fed. (2) 950.—Where a cemetery was surrounded by dwellings and was a menace to safety of life and property in the district because of delay of the fire department in responding to general alarms, and the cemetery was being neglected and thousands of graves were uncared for and were covered with weeds and shrubs, an ordinance in accordance with St. Cal. 1923, p. 646, declaring such cemetery a nuisance and directing removal therefrom of bodies buried therein, was valid against objection of lot owners.

Such an ordinance was not arbitrary and did not deny lot owners equal protection of law because two cemeteries similarly situated were not declared to be nuisances, since if they were such, there was nothing to prevent their abatement one at a time.

TENNESSEE.—*Mensi v. Walker*, 26 S.W. (2d) 132.—Private Acts, 1925, ch. 405, prohibiting the establishment or enlargement of cemeteries without the consent of the county court or legislative body of the municipality, giving jurisdiction to the county court where the cemetery is located beyond five miles of the city limits and to the municipality's legislative body alone or to it and the court where the cemetery is within five miles of the city or within the city, requiring exercise of sound discretion, is not invalid as conferring arbitrary power upon the Court or the municipality's legislative body.

That land is used as a cemetery does not make it a nuisance per se.

It is within the power of the Legislature in a reasonable manner to regulate the location and maintenance of cemeteries as involving public health, public welfare, disarranging location of highways or streets, or retarding or destroying civic enterprises.

The regulation of the location and maintenance of cemeteries might be properly confined by the act of the Legislature to congested centers and so to particular localities without making the act void as being class legislation.

Filling Station

IDAHO.—*Continental Oil Co. v. City of Twin Falls*, 286 Pac. 353.—The fact that action was postponed until conditions arose making property involved too valuable for residential purposes only, was not an assent to a restriction placed upon property by ordinance against the construction of a gasoline filling station which would preclude the plaintiff from attacking its constitutionality.

If an ordinance prohibiting the construction of a gasoline filling station within 500 feet of school ground was invalid when passed in 1920, lapse of time, however long, would not render it valid, and statutes of limitation could not be invoked. Nor is the property owner precluded by delay from bringing action where the city had not been induced to change its position to its disadvantage because of any act of plaintiff, and no rights of property had sprung into existence by reason of the ordinance.

Conditions alleged to exist as to traffic, etc., in 1927 raise issues as to the constitutionality of such an ordinance passed in 1920.

The ordinance was invalid as discriminatory in that it did not apply to all businesses of the same class, since if it was intended to regulate the sale of gasoline as a danger or obnoxious business, it did not cover garages, stores and other places where gasoline was retailed by means of a curb pump, and if the object was to regulate driving of vehicles across the sidewalk, it discriminated in favor of businesses such as garages, drive-in refreshment stands, etc.

Access to a public way across sidewalks, subject to the right of reasonable regulation, is an incident of ownership of abutting land, appurtenant to it, vested in the landowner, of which he cannot be deprived without compensation.

A municipality has the right to classify businesses, but must do so reasonably and cannot leave this power to the city council in its discretion without definite and certain rules to guide it in the exercise of that discretion.

The 1930 Municipal Index

contains a feature of unusual interest and value in the form of an analysis, by Mr. Williams, of legal decisions on zoning and city planning that were reported in THE AMERICAN CITY from June, 1923, to December, 1929. These decisions are classified under appropriate topics, and in each instance the gist of the decision is given, along with the state, the title of the case, the reference to the law reports, and the page in THE AMERICAN CITY where the case had been previously dealt with. This occupies 19 pages (132 to 150).

Racial Regulation

KENTUCKY.—*Warley v. Board of Park Commissioners*, 26 S. W. (2) 555.—Rules of the Board assigning portions of parks for the exclusive use of negroes and other portions for white people are valid.

Private Covenants

MICHIGAN.—*Davis v. Survari*, 230 N. W. 176.—A covenant limiting the use of property to residence purposes does not forbid the erection of apartment houses.

A restriction against the erection of a building within 30 feet from the front line of the lots is inapplicable to an avenue subsequently extended diagonally across the lots.

Eminent Domain—Golf Courses

MICHIGAN.—*People for Benefit of Regents of University of Michigan v. Pomering*, 230 N. W. 194.—A jury could validly find, in condemnation proceedings by the state, that necessity existed for taking land to establish a golf course for educational purposes of the State University.

Eminent Domain — Elevated Railroads

NEW YORK.—*Matter of New York*, Appellate Division, reported in *N. Y. Law Journal*, May 26, 1930.—Under a statute for the condemnation of an elevated railroad, the franchise for which was no longer of any value, the removal of the structure and the condemnation of the rights of light, air and access acquired by the road, from abutting property owners, and contemplating the assessment of benefits upon the abutting owners, the city must pay the railroad, as damages for the rights of light, air and access taken, the amount originally paid by the railroad to the property owners therefor.

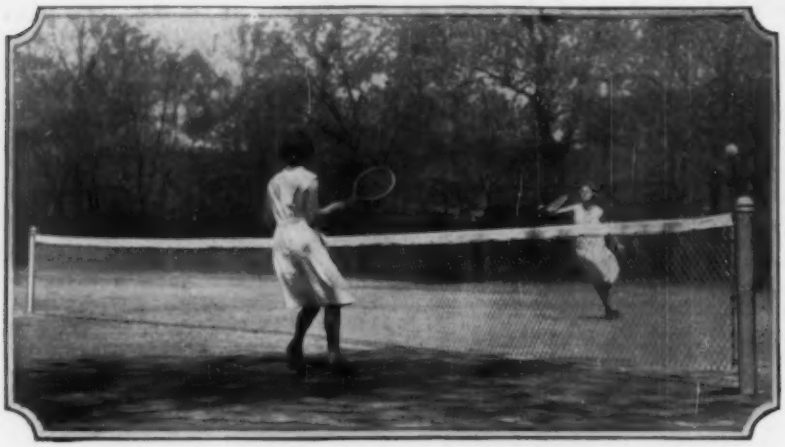
Airports

NEW JERSEY.—*Stern v. Mayor and Aldermen of Jersey City*, 150 Atl. 9.—Act April 1, 1929 (P. L. p. 49) authorized the governing body of any municipality to use for airport purposes land previously acquired for other public purposes, and now being used for airport purposes and to lease such land. The land in question had been filled in by the city in connection with other lands acquired with riparian land. Held, overruling various procedural objections, that the city had validly acquired a lease of it.

Billboards

OKLAHOMA.—*Gibbons v. Mo. K. T. R. Co.* 285 Pac. 1040.—The regulation of sign-

STEEL WIRE TENNIS NET



Embodies all the advantages of a good cord net
Installation is permanent
Eliminates daily erection and removal
Not affected by rain, snow, sleet, heat or violent changes in temperature
No upkeep or maintenance cost
Should last for a lifetime
Height never varies
No reel to bother with
Does not tear or wrap
Cannot injure or cut the ball
Stays in perfect position permanently
Beautifies the tennis court
Pays for itself the first year

A Revolutionary Money-Saver for Parks, Playgrounds and Schools

Here is a tried and tested practical invention that pays for itself the first year. Durability of construction guarantees years of service. Easily, quickly and permanently erected by ordinary labor. Installation ends forever the high cost of labor and trucks used to erect and remove cord nets. This great saving more than pays for the American Chain Link Tennis Net the first year.

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Pays for Itself Many Times Over the Very First Year—In Cost —In Convenience

Officials tell us that the cloth nets used on courts maintained by public parks and playgrounds must be replaced twice annually. This cost is eliminated by the American Chain Link Tennis Net. Also, records prove that labor costs . . . erecting and removing nets each day on public courts . . . average five times the cost of the net itself. This terrific expense is also eliminated by the use of the American Chain Link Tennis Net.

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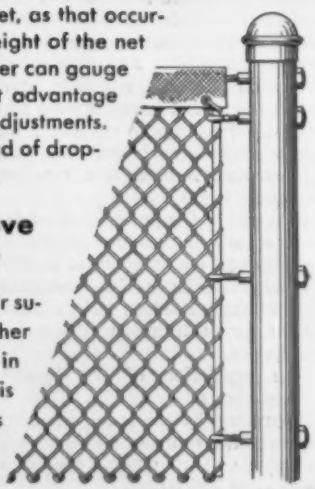

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boards is a proper exercise of the state police power.

Section 3494, Oklahoma Compiled Statutes, 1921, conferring jurisdiction upon the corporation commission over all public highway crossings and the removal of obstructions of the view of such crossings, is a valid police power regulation.

Such an obstruction on private property may be so removed without compensation.

Residential District

WASHINGTON.—*Tutle v. Fitchett*, 287 Pac. 7.—Many lawful and necessary businesses, though not nuisances per se, may become so when conducted within an exclusively residential district. The establishment of an amusement park on a small lake in the midst of a thickly settled community a few miles from the business section of a large city, on a 3-acre tract having a lake frontage of 200 feet, is such a nuisance.

The Court judicially knows that persons aquatically inclined will take undue liberties upon property along a lake shore, seriously interfering with the rights of privacy and property.

Special Assessment in California

In the latest *Regional Planning Notes* issued by the Regional Planning Commission of the County of Los Angeles, is an item with regard to a pamphlet recently prepared by James T. Tucker, assistant to the Director of the School of Citizenship and Public Administration, entitled "Special Assessments in California," presenting the subject, from a practical as well as a legal point of view, in such a way as to be useful alike to lawyer and layman.

Zoning in Baltimore

The *Baltimore Municipal Journal* of May 30, 1930, contains an article entitled "Zoning and its Importance," which gives a short history of zoning in that city and an account of the activities of its Zoning Commission and Board of Zoning Appeals during the period of the last three years.

Planning Legislation in Kentucky

The Kentucky City Planning and Zoning Enabling Act, included in the list of recent legislation at the beginning of the Notes for this month, is, as its title indicates, a law including city planning commission and zoning provisions, these provisions being so separated as not materially to change the legislation by inclusion under a common title.

In zoning, the act substantially follows the standard act of the Department of Commerce at Washington.

In the main, the planning commission provisions of the law follow those of the standard act of the Department of Commerce at Washington; except that the provisions with regard to buildings in the bed of mapped streets are substantially the police power provisions of the New York Laws.

In subdivisions, the commission is given control of five miles beyond the limits of the municipality.

Kentucky has also passed a full and carefully drawn major street improvement act.

The Department of Commerce Survey of City Planning Laws

The latest bulletin of the Department of Commerce, surveying city planning legislation in this country, indeed fills, and fills admirably, a long-felt want. It gives a description of city planning commissions in this country and the existing laws authorizing them, touches briefly upon the subject of airports, which it has considered extensively in other publications, and makes brief mention of parks. Regional planning is also included in this survey of legal progress. Schedules with references to legislation, full and complete to date, are annexed.

Ohio Revives Its Municipal League

IN the state of Ohio, with its important urban interests and its activity in municipal progress, a league of cities was first organized in 1912 and continued until the war. Its re-establishment has been hampered by a decision of the Ohio Supreme Court declaring it illegal for cities to pay dues into a general organization of municipalities.

A new movement is now under way to revive interest in a municipal league. On June 20 a meeting of representative officials was held at Ohio State University looking towards permanent cooperation between the cities of the state. The meeting was well attended and those present were hopeful of securing results. Mayors of many of the smaller towns were present and practically all the large towns were represented.

Mayor William T. Jackson of Toledo was elected President; City Manager F. O. Eichelberger of Dayton, Vice-President; and Mayor Arthur T. Schuler of Bucyrus, Mayor R. O. Bryan of Portsmouth, and Mayor Homer M. Johns of Massillon, Trustees. Professor Harvey Walker was chosen as Secretary-Treasurer, and headquarters were established in the Political Science Department of the State University at Columbus.

These officers constitute an executive committee which was directed to report a plan of permanent organization to a subsequent meeting to be held in Cleveland in November, at the same time as the National Conference on Better City Government. This committee was empowered to appoint such committees as were deemed necessary in order to prepare a comprehensive municipal program for presentation to the November meeting. Five committees were appointed, viz.: (1) Uniform Traffic Code; (2) Uniform Crime Reporting; (3) Taxation; (4) Revision of the Municipal Code; and (5) Legislation.

Before the League can be adequately financed, some enabling legislation must be secured or this last attempt at municipal cooperation will be little more successful than previous ones. The officers of the League feel that there is a good chance that the law can be passed if the Assembly can be made to feel that the cities want it and tht the privileges conferred will not be abused. One of the tasks assigned to the new legislative committee will be that of drafting such a bill for presentation to the 1931 seccion of the General Assembly. Pending action by the General Assembly, every city in the state of Ohio will be considered a member of this organization and entitled to all its services. The Department of Political Science at Ohio State University will undertake to perform these services during this period. Bulletins on water-supply, water treatment, and ownership of utilities in Ohio have already been published.

The Municipal Bond Market

By SANDERS SHANKS JR., EDITOR, *The Bond Buyer*

WITH all fundamental factors definitely in its favor, the bond market continued to gain strength during the past month. Prices of high-grade municipal obligations moved up in the active trading which featured the first half of June, insurance company and private investor demand broadening considerably. While the savings banks are not participating to more than a nominal extent in the current municipal market, it is reported that commercial bank buying is steadily increasing, and optimistic professional opinion on the outlook is based on the belief that current low money rates (for instance, compare call money at 2½ per cent with a 4 to 4½ per cent tax-free return on the best municipal bonds) will in the near future force the banks very generally throughout the country into the market for bonds of medium to moderately long maturity. Should a genuine demand from that source develop, municipal securities would enjoy a runaway market that might easily put prices back where they were in 1927 and early in 1928, say three or four points above the current range of quotations.

The following table, giving the details of recent sales of new issues, will indicate the current level of municipal issues:

Amount	Municipality	Rate (%)	Maturity	Net Basis (%)
6,000	Bridgman, Mich.	4	1-15-yr. (ser.)	3.78
$30,000	Concord, Mass.	4	20-yr.	3.95
20,000,000	New Jersey	4¼	15½-yr. (avg.)	4.08
1,700,000	Nassau Co., N. Y.	4 & 5	10-yr. (avg.)	4.17
3,980,000	Milwaukee, Wis.	4 & 4½	9½-yr. (avg.)	4.42
1,477,000	Birmingham, Ala.	5	19 5/6-yr. (avg.)	4.44
750,000	Kanawha,, W. Va.	5	11-yr. (avg.)	4.52
75,000	Los Angeles Co., Calif.	4¾	6½-yr. (avg.)	4.61
1,040,700	Zanesville, Ohio	4¾	6-10-yr. (op.-avg.)	4.73
150,000	Delaware Co., Iowa	5	5 1/3-yr. (avg.)	4.76
15,750	Tiffin, Ohio	5½	21 1/3-yr. (avg.)	5.32
150,000	Highland Park, Texas	5½	3-14-yr. (ser.)	5.41

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Prices when mentioned do not include postage unless so stated. Pamphlets, reports and free publications should be ordered direct from addresses given.

Special Assessments in California

By James I. Tucker, Assistant to Director, School of Citizenship and Public Administration, University of Southern California. Published by the author, 203 Wilson Building, Los Angeles, Calif. 1930. 342 pp. $3.50.

This volume, of handy size for carrying about, contains not only "a simplified discussion of principles," as stated in the subtitle, but a considerable amount of detail relating to California assessment law and its application. It nevertheless can be of value in other states, as the theoretical discussion is largely general, and the points of procedure contain features of interest elsewhere, because of both similarities and differences as regards practice in other jurisdictions. Experience in Los Angeles is largely drawn upon, as a great amount and variety of special-assessment work has taken place there. The ten chapter topics indicate the scope of the contents: the rights of the taxpayer; limitations upon ownership in land; rights of the public in private property; taking jurisdiction; fundamentals of procedure; street bonds; improvement programs; road department work and contracts; assessment burdens, abuses and remedies; synopsis of various California acts. There is a 12-page index.

The Small City and Town

Edited by Roland S. Vaile, Professor of Marketing, University of Minnesota. University of Minnesota Press, Minneapolis. 1930. 160 pp.

Is there any place for the small city and town in the modern economic organization? This was the chief question considered at a Conference on Community Relations which was a special feature of the 1929 Summer Session at the University of Minnesota. The present volume is made up of the Conference papers and bears definitive testimony in the affirmative. Although the papers are predominantly devoted to the economic relationships of the small town, to the social set-up, and to banking, merchandising, and manufacturing, the Conference is shown to have progressed towards the outlining of a program of engineering and administration. Town forestry, highways, the weekly newspaper, radio programs, school systems, and budgeting and accounting procedure as these are matters of concern to the small town, are also included among the papers in the volume, with further matters of civic and municipal import left to be taken up at later conferences.

Industrial Surveys: An Outline for Communities and Manufacturers

By George C. Smith. Industrial Club of St. Louis. 1930. 60 pp.

This excellent pamphlet is concerned with the methods of making industrial surveys. As the author points out, many such surveys have been poorly planned and inadequately financed. The author gives a carefully considered outline of such a survey, including various civic and social data, climate, resources, railroad, utility and banking facilities, classified under thirty headings with appropriate subdivisions. There is a generous bibliography and a select list of 47 surveys of important cities of the country. Though the illustrative material is wholly from St. Louis, this volume should have a wide general use.

Citizens Look at the Schools

This 32-page pamphlet report was made by the Subcommittee on School Visiting of the Committee on Education of the Women's City Club of New York in the hope of awakening a wider public interest in the city schools. It describes modern educational experiments being made in elementary schools, and includes brief resumés by members of the Sub-committee on the Psycho-Educational Clinic, ungraded classes, the Dalton plan, Miss Elizabeth Irwin's experimental classes, kindergartens and kindergarten extension classes, the visting teacher, visual instruction, art work, music, cardiac classes, classes for crippled children, and health education. (Apply to the Club, 23 Park Ave., New York.)

Standards Yearbook, 1930

Compiled by The National Bureau of Standards, United States Department of Commerce. Published by Government Printing Office, Washington, D. C. 300 pp. 75c.

Activities and accomplishments not only of the National Bureau of Standards and other agencies of the Federal Government and the states, counties, and municipalities, but of technical societies and trade associations, are included in this volume, with outstanding methods used to encourage and facilitate standardization, and programs for future work. This represents a considerable broadening of scope over the former volumes. Special features this year include an outline of important standardization activities in transportation and a description of developments towards simplification of the calendar. Also included is a bibliography of recent publications on standardization. The chapter on the Government's interest in the advancement of simplification and standardization, by Ray M. Hudson, finds in the Old Testament and in our own Colonial history adequate precedent for what he calls "probably the most important contribution by the United States Government."

The North-East Lancashire Joint Town Planning Advisory Committee Reports on Regional Planning

Regional thinking is a present-day essential, says the foreword of this excellent report, which is a large quarto volume of 80 pages, handsomely illustrated and with large colored maps in a pocket insert. The report is typical of fine regional studies being made and published by numerous joint town planning bodies under the English Town Planning Act. It presents in broad outline zoning proposals; transportation scheme; population density provisions, that is, provisions for minimum density and for building heights; architectural, historic and archeological preservation; development of regional open areas; the preservation of village centers and the creation of civic centers; and suitable shopping centers. 12 shillings, 6 pence, net. (Apply to Sir Lewis Beard, Hon. Secretary, Town Hall, Blackburn, England.)

The Regional Planning Schemes of North-East Kent

This substantial and well-illustrated report, with its accompanying large, folded, colored maps, has to do with what is known as "The Garden of England." The task of the Joint Town Planning Committee presenting it has therefore been the interesting one of conserving traditional natural beauty and carrying that beauty over into newly created open areas, while making amplest provisions for the inevitable industrial and business expansion of a region lying adjacent to Greater London on the one side and the new coalfields of Kent on the other, and transversed by the main lines of transportation between coast and Capital. Zoning, protection of trees, protection of ancient monuments, control of filling station design and of billboards and roadside planting are among its leading features. 82 pp. in stiff covers. 7 shillings, 6 pence, net. (Apply to F. C. Boucher, L.L.B., Hon. Sec., Gillingham, Kent, England.)

The Boston Fire Waste Survey

This is a 134-page reprint of an illustrated article on "Fire Protection Engineering as Applied to Municipalities" in the April number of the *Journal of the Boston Society of Civil Engineers*. The article consists of a paper presented by Kenneth F. Akers at a meeting of the Society, and the subsequent discussion. Mr. Akers describes the survey, of which he was Associate Engineer, made by the Albert Russel Erskine Bureau of Harvard University and the Field Engineering Department of the National Fire Protection Association, of the problem of fire waste and insurance rates in the city of Boston. (Apply to the *Journal*, 715 Tremont Temple, Boston, Mass.)

The American School and University

A Yearbook Devoted to the Design, Construction, Equipment, Utilization, and Maintenance of Educational Buildings and Grounds. 1930-1931. Third Annual Edition. American School Publishing Corporation, New York. 571 pp. $5.00.

"The problem of the rapidly extending range of American education demands constant thought and vigilance regarding every phase of school building," Ray Lyman Wilbur, Secretary of the Interior and President of Stanford University, points out in the Foreword to the latest edition of The American School and University. Prepared for officials, educators, architects and builders concerned with school construction, and maintenance, this yearbook seeks to meet the need for authoritative information on the latest developments and tendencies in planning, building, equipping and using school and college buildings.

Specialists in many lines, including professors of education, architects, engineers, principals of schools and government experts, are among the authors represented; the 56 articles contain much material of lasting value, based on actual experience and observation, and in many cases illustrated with photographs of the work discussed. The scope of the volume is indicated by the sections into which the editorial material is divided: I, Broad Problems of Expansion and Economy; II, Design and Construction of Buildings; III, Modernization, Maintenance and Insurance; IV, Landscaping and Upkeep of School Grounds; V, Buildings and Equipment for Physical Education and Play; VI, Classroom, Office, Library and Auditorium; VII, Commercial Education; VIII, Home Economics—Cafeteria—Dormitory; IX, Industrial Education; X, Laboratory.

Sections XI to XVII contain useful reference material, including a chemical index, lists of distributors of equipment, more than 1,100 architects for educational buildings, 72 landscape architects for university and school projects, superintendents of schools in places of 5,000 population and over, aids available to local school boards from state departments of education, publications on school buildings, and alphabetical and classified lists of manufacturers. A cumulative index gives references to articles in the two preceding editions.

The Annual Report of Staunton, Va.

Staunton was the birthplace of the council-manager form of government. This is its 22nd annual report under this plan as of March 31, 1930; and as presented by J. L. Wits, Mayor, and Willard F. Day, City Manager, it renders a concise account of municipal affairs in healthy and commendable condition. Details include: a cash balance of $5,908; reduction of $28,620 in bonded indebtedness; public improvements from current revenues, $72,234; the construction of a water-softening plant by city forces; purchase of fire and street department equipment; employment of a full-time sanitary officer; and a good beginning on the remodeling of the City Hall. The material is well-organized and specifically set forth, with illustrations. 62 pp. (Apply to City Manager.)

Highway Research Board Proceedings

The Ninth Annual Meeting of the Highway Research Board, which is part of the Division of Engineering and Industrial Research of the National Research Council, met at Washington, D. C., December 12-13, 1929. The Proceedings, which are edited by the Director of the Board, Roy W. Crum, include papers on "Application of Aerial Mapping to Highway Construction," "Soil Investigations in Russia," "Seasonal Distribution of Traffic," "Loads on Closed Conduits," "Washboards in Gravel Highways," "Influence of Climate on Roads," "Subgrade Investigations," "Control on Concrete Pavements," and "Accuracy of Water Measurement on Paving Mixers," as well as committee reports. 403 pp., including photographs and diagrams. $2. (Apply to Publications Office, National Research Council, B and 21st Sts., Washington, D. C.)

Master Construction Glass-Overs for Sludge Beds

Sewage Disposal Plant at Highland Park, Ill. It's a part of the chain of plants coming under the head of Chicago's North Shore Sanitary District

How Chicago's Residential Suburbs Solve Their Sewage Problems

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Providence Health Survey

By James Wallace, M.D. American Public Health Association, New York. 1929. 314 pp. $1.00.

This survey and appraisal of the health activities of Providence, R. I., made under the auspices of the Committee on Administrative Practice of the American Public Health Association, will be of particular interest to professional workers concerned with public health administration, because of the notable achievements of the Providence Health Department under the direction of Dr. Charles V. Chapin, Superintendent of Health for nearly half a century. The example of Providence has always been and still is worthy of emulation with respect to public health procedures.

JAMES A. TOBEY.

Improving the Budget

A 15-page pamphlet published by the Women's City Club of New York, and having to do with better fiscal methods for New York City. It was prepared by Joseph McGoldrick, and was the subject of a column in "The Taxpayer's Dollar," THE AMERICAN CITY for June, page 171. It constitutes a sequel to a pamphlet of similar size entitled "Financing New York City," published by the Club in May, 1929. (Apply to the Club, 22 Park Ave., New York.)

New Brunswick, Canada, Its Natural Resources and Development

A handsome booklet of 167 pages, with 38 photographs, 10 sketch maps, and a general map in color, describing the present development and future possibilities of this Canadian province. It is issued by the Natural Resources Intelligence Service of the Department of the Interior, Ottawa, Ont.

Studies of the Efficiency of Water Purification Processes

The fourth of these studies has been issued as Public Health Bulletin No. 193, under the subtitle, "Report on a Collective Survey of the Efficiency of a Selected Group of Municipal Purification Plants Located Along the Great Lakes." It is by Sanitary Engineer H. W. Streeter, of the United States Health Service. November, 1929. 100 pp. 20c. (Apply to Superintendent of Documents, Washington, D. C.)

The Menace of the Movies

A series of five articles presenting various phases of an urgent American problem, appeared in recent issues of *The Christian Century* under the titles: I, The Menace of the Movies; II, Our Children and the Movies; III, Ambassadors of Ill Will; IV, Who Controls the Movies?; and V, What's to Be Done With the Movies. These are now available in a pamphlet reprint. The author, Dr. Fred Eastman, Professor of Religious Literature and Drama in the Chicago Theological Seminary, knows the moving-picture business, inside and out; he is a trained, experienced sociologist. He has made a complete study of all available material on this vexed problem and has presented his findings with a series of recommendations for reform sufficiently forceful to challenge active interest not only of parents and civic organizations, but of municipal agencies. 16 pp. quarto. 10c per copy; $7.50 per hundred. (Apply to The Christian Century, 440 S. Dearborn St., Chicago, Ill.)

City Plan, Little Rock, Ark.

John Nolen, city planner, associated with Hale J. Walker and Justin R. Hartzog, has prepared this attractively printed report of 24 folio pages for the Council of the City of Little Rock. Recommendations are presented with regard to street traffic, recreation, public buildings and public areas, public schools, public esthetics, residential property, industry, aviation, suburban areas, North Little Rock, and the colored population. A Zone Plan and Ordinance is also advised. (Apply to Dr. Nolen, Harvard Square, Cambridge, Mass.)

State Laws on Public Health Nursing

Reprinted from *The Public Health Nurse* for May, 1930, this article by James A. Tobey, LL.B., Dr. P.H., editor of the health department of THE AMERICAN CITY and director of health service of the Borden Company, presents "abstracts of all known state laws now in force which refer expressly to public health or visiting nursing, together with proper citations to each." 8 pp. (Apply to Dr. Tobey, The Borden Co., 350 Madison Ave., New York.)

Iowa Public Water-Supplies

A 39-page pamphlet constituting Engineering Bulletin No. 10, issued by the Division of Sanitary Engineering, Iowa State Department of Health. It is by A. H. Wieters, Chief Engineer of the Division, and besides descriptive text includes tables giving in detail the source and treatment of water-supplies by towns and counties throughout the state, together with data on population, connections, metering, consumption and storage. There is included separately a map of the state showing the location of the water-supplies by means of various symbols. (Apply to the author, Des Moines, Iowa.)

Heights of Buildings

The transactions of the Commonwealth Club of California (Vol. XXV, No. 3, April 29, 1929, pp. 107 to 145) comprise papers by the Club's City Planning Section, which has for more than two years been studying limitations of building heights. Owners, architects, engineers, construction men, financiers, traffic authorities, building managers, and others have been consulted, the legal and artistic phases considered; and the present report is presented in the form of a group of papers by Carl J. Rhodin, Stephen Child, Frank D. Stringham, and others, followed by discussions. (Apply to the Club, 345 Sutter St., San Francisco, Calif.)

An Analysis of the Prison Problem

This 14-page reprint from the *Journal of Criminal Law and Criminology* for February, 1930, is an outline of the elements of the prison problem and of modern and approved methods of dealing with them. It was prepared by E. Stagg Whitin, Executive Director of the National Committee on Prisons and Prison Labor, at the request of members of the Secretariat of the League of Nations. (Apply to Mr. Whitin, 4 W. 57th St., New York.)

525,600 Minutes in a Year

"The Minutes Tell the Story—There are 525,600 Minutes in a Year" is a 10-page folder summarizing the activities of the Wilkes-Barre Wyoming Valley (Pennsylvania) Chamber of Commerce. (Apply to the Chamber, Wilkes-Barre, Pa.)

Tomorrow's Town

Number 1, Volume 1, of *Tomorrow's Town*, published by the City Housing Corporation of New York, builders of Sunnyside Gardens, New York City, and Radburn, N. J., bears the date of May 15, 1930. This first issue is largely devoted to news about Radburn, "The Town for the Motor Age." 4 pp. (Apply to the City Housing Corporation, 18 E. 48th St., New York.)

Dayton and Its City Plan

This 24-page pamphlet, prepared for the City Plan Board of Dayton, Ohio, by L. Segoe, consulting engineer and city planner, is intended as a popular résumé of Dayton's comprehensive city plan, which comprises several hundred pages, and as a city planning primer, giving the aims and purposes of city planning in general. Subdivision control, zoning, thoroughfares, grade-crossing elimination, schools, parks and playfields are discussed. The outstanding recommendations of the Dayton plan, and its accomplishments to date, are enumerated. (Apply to Mr. Segoe, 35 E. Seventh St., Cincinnati, Ohio.)

Report of the New York State Housing Board

Legislative Document (1930) No. 84, an illustrated pamphlet of 105 pages, is the annual report of the State Board of Housing to Governor Roosevelt and the Legislature of the State of New York. The first section, on Construction Under the Law, describes limited dividend corporations organized and operating under the State Housing Law, and gives tabular summaries, including balance sheets and operating statements, for the completed projects. Tables are also presented showing some of the controllable variables in the cost of housing, the results of certain cost studies. Section II, on Housing Conditions in New York City, summarizes the results of an inquiry into housing conditions in the older and more deteriorated sections of New York City. A model housing code for municipalities in New York State and proposed amendments to the State Housing Law are also presented and discussed. (Apply to the Board, Albany, N. Y.)

Electric System Handbook

Clarence Herbert Sanderson, Editor-in-Chief. McGraw-Hill Book Co., New York. 1930. 1,167 pp. $5.00.

A manual of central-station practice in convenient form (5 by 8 inches), prepared for practical operators and maintenance men, inspectors, draftsmen, and students. Beginning with a brief and simple treatment of electrical theory, it proceeds to the fundamentals of the design, construction and operation of generating and transforming equipment, auxiliary devices, switches, switchboards and motors, through four of the fourteen sections. Then follow six sections on the component parts of the electric system in detail, from the generating process to distribution. The last four sections are on protection; inspection and maintenance; engineering tables; and definitions. Higher mathematics is omitted from the discussions. There are numerous tables, charts, diagrams and pictorial illustrations. The editor-in-chief is assistant electrical engineer of The New York Edison Co., with many years of experience with that company and others. He has been assisted in the preparation of this volume by a number of other men with various electric companies or engineering schools. The book should find a useful place in municipal electric light and power departments.

Building Code Tabulation

Published by the Division of Building and Housing of the Federal Bureau of Standards, this mimeographed survey presents information based almost entirely on answers to a questionnaire sent out during February and March, 1930, to building inspectors, city clerks, and others from whom it was thought authentic information could be obtained, in municipalities of over 5,000 population (1920 census). The questions concerned the date of the building code, the state and method of revision, and principal changes, if any. 57 pp. (Apply to the Division of Building and Housing, Bureau of Standards, Washington, D. C.)

Official Road Map, State of New Jersey

The 1930 Official Road Map of the State of New Jersey is a large colored map which folds up into pocket size. It shows the different types of roads and highways throughout the state. On the back of the map are given the state and national highway routes and their numbers, as well as several illustrations of some of the accomplishments of the State Highway Commission. (Apply to the Commission, Trenton, N. J.)

Automobile Route Book

The Cleveland Automobile Club publishes this Automobile Route Book and Directory of the Northeastern United States and Canada. It consists of 400 pages of routes, maps and other information of value to tourists, including a brief abstract of the automobile laws in the states covered. $3. (Apply to the Club, 712 Superior Ave., Cleveland, Ohio.)

Filing Traffic Accident Reports by Locations

The National Safety Council's Public Safety Memo No. 40 lists eleven points to follow in filing traffic accident reports by locations. This is the only method of filing which makes it possible to obtain information on any intersection within a few minutes after it is called for. Three drawings illustrate the way this system should be used. 4 pp. mimeographed. (Apply to the Council, 108 E. Ohio St., Chicago, Ill.)

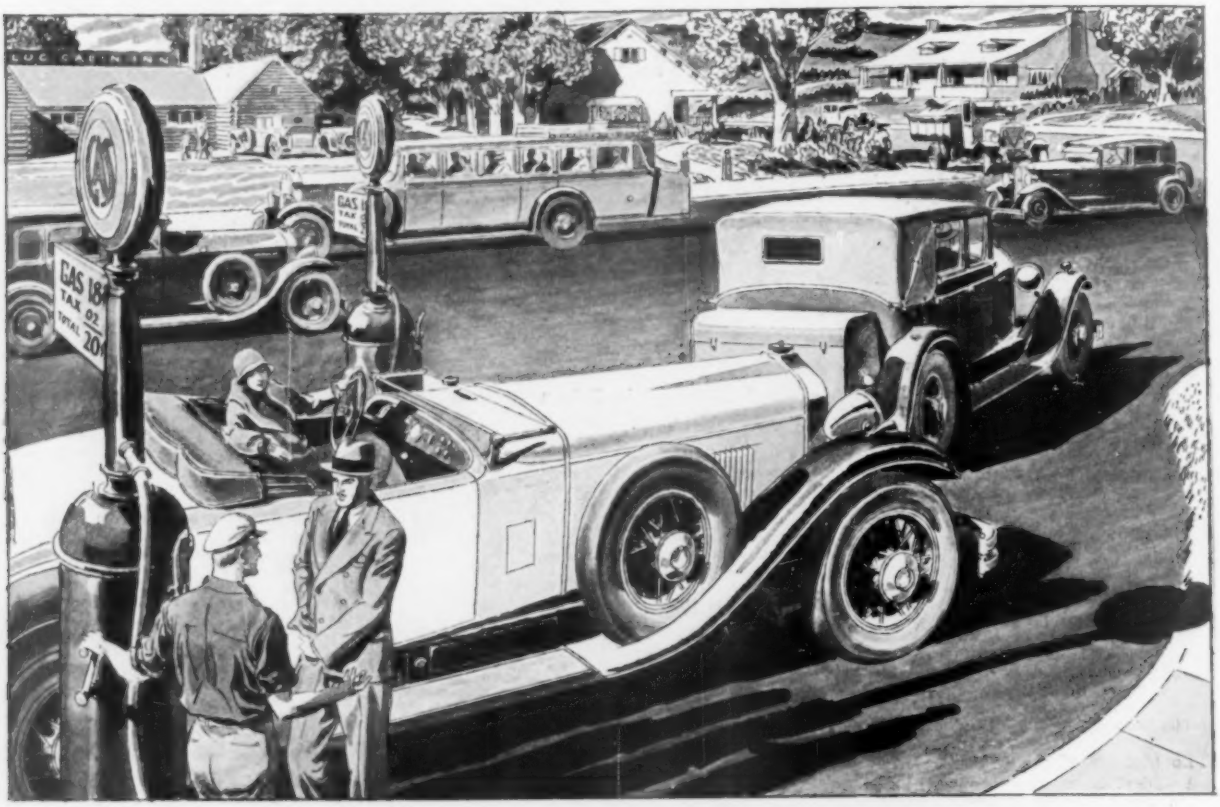
The Adoption of the Master Plan

An address on "The Adoption of the Master Plan," presented by Latham C. Squires before the Westchester County Planning Federation on April 15, 1930, has been mimeographed by the Federation as Bulletin No. 40. Mr. Squires discusses the progress which has been made by New York State municipalities in adopting "as is" and "amended" official maps, and the steps which should be taken in the adoption of a master plan. 8 pp. (Apply to the Federation, 201 Main St., White Plains, N. Y.)

Political Activities of Public Employees

Greater Cleveland, Bulletin of the Citizens League of Cleveland, Ohio, issue of May 1, 1930, is devoted to this subject, and to a discussion of why civil service laws, Federal, state, and municipal, prohibit such activity. 4 pp. (Apply to the Citizens League, Swetland Bldg., Cleveland, Ohio.)

Roads are bought by the Gallon



If car owners ever nourished the idea that good roads were provided free of charge, the little signs they now see at every filling station, "Gasoline Tax 2 cents" (or more), have set them right.

Now that motorists know who pays, they are displaying more interest than ever in roads. Not a few of them are beginning to wonder if there isn't a practical way to get more roads and wider roads from the money available.

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State Government

This new monthly magazine is published by the American Legislators' Association, which expects eventually to send it each month to every one of the 7,500 legislators throughout the United States. It will contain, it is stated, "information: concerning significant legislative innovations; concerning noteworthy practices which increase legislative efficiency; concerning recommendations made to legislatures by the Commissioners on Uniform State Laws, the National Education Association, the American Bar Association, the American Medical Association, the National Conference of Social Work, and by scores of other reputable organizations; and concerning outstanding contributions to every branch of the science of state government." The first number includes two articles by Edwin E. Witte, Chief of the Wisconsin Legislative Reference Library, entitled "A Trail Blazer" and "'A Law-Making Laboratory." 25c a copy; $2.50 a year. (Apply to the Association, Equitable Bldg., Denver, Colo.)

Replanning Blighted Areas

Under the caption "Know Your City," the Philadelphia Housing Association has published in a 16-page illustrated pamphlet an address on "The Economic Values Attendant Upon the Replanning of Blighted Areas" made by Harold S. Buttenheim, Editor of THE AMERICAN CITY, at the annual meeting of the Association on March 31, 1930. Achievements in Manhattan, St. Louis, Chicago, Boston and Philadelphia are cited to show how slum areas have been converted into distinct assets to their communities. (Apply to the Association, 311 S. Juniper St., Philadelphia, Pa.)

School of City Planning, Harvard University

The 1930-1931 Official Register of the School of City Planning of Harvard University lists the courses open to students in the school and outlines the requirements for admission and for the degree of Master in City Planning. Fellowships and scholarships available, and a brief list of suggested readings in city planning, are included. (Apply to the School, Harvard University, Cambridge, Mass.)

Women in the Public Service—A General Survey

This article in the April issue of *Public Personnel Studies* is the first of a series of articles by Avice Marion Saint dealing with women in public service, and is based on material collected for her Master of Arts thesis at the University of California in 1929. The general survey covers the types of positions open to women, and the extent to which women are employed, in international organizations such as the League of Nations and the International Labor Organization, and in government services in the United States, Canada, Great Britain, Germany, Finland, Denmark, Sweden, Switzerland, and other European countries. (*Public Personnel Studies* is 50c a number. Apply to the Bureau of Public Personnel Administration, 923 E. 60th St., Chicago, Ill.)

Municipal Golf Courses in the United States

With Statistical Information. This 31-page pamphlet is issued by the Public Links Section of the United States Golf Association. All municipal courses known to the Association are listed by states, with a brief note for each telling when the course was opened, by whom it is operated, the number of holes and the length of the course, the fee charged and other similar data. (Apply to the Association, 110 E. 42d St., New York.)

Philadelphia Traffic Survey—West Philadelphia

Report No. 5 of the Philadelphia Traffic Survey, made under the direction of Mitten Management, Inc., deals with traffic conditions in the section of the city west of the Schuylkill River known as West Philadelphia. The report "investigates concentration of traffic with respect to time and place, and deduces therefrom possible means of relief both regulatory and physical not only for present but for future traffic requirements." The material is presented in three sections: I, Traffic Characteristics; II, Recommendations for Regulatory Measures; III, Recommended System of Main Traffic Arteries. 36 pp., plus a number of maps and diagrams. (Apply to Mitten Management, Inc., Mitten Bldg., Philadelphia, Pa.)

Recreation In and About Boston

Compiled by the Prospect Union Association, Cambridge. Houghton Mifflin Company, Cambridge, Mass. 1930. 230 pp. $1.50.

The subtitle of this very readable volume is "A Handbook of Opportunities," and it is presented as "a practical guide for those who wish to make their leisure truly creative." Specifically, it is for the young people, "unattached, undomesticated, and unacquainted," who come flooding into the metropolitan region to study or work, "many of whom have never seen the ocean after a storm, or a mass of Japanese cherry trees in blossom, or looked at pictures intelligently, or sung the best music under the best of teachers." Its intent is not only to make life healthier and happier, but to "quicken the joy of life." Its initial sketch on "Cruising Afoot," with a list of 'Some Walking Essays" appended, is followed by equally engaging chapters on bird walks; historical walks; and geology; architecture worth seeing; outdoor sports; folk dancing; on "Recreation for the Mind"—reading, music, art and dramatics. Each essay is followed by an extensive list of "opportunities," and the authors include: Richard K. Conant, Commissioner of Public Welfare in Massachusetts; Robert Peabody Bellows, A.I.A., of Harvard University; James Ford, Professor of Social Ethics, Harvard University; Joseph Lee, President, Playground and Recreation Association of America; Francis Green Peabody, Professor Emeritus of Social Ethics, Harvard; and other "representative men" of New England—and some women.

The fact of such a book's production is significant to the public official or civic leader who sometimes suspects that the large percentage of the whole population of his city unaffected by the present recreation programs may be due in part to the fact that these programs have not provided sufficiently for "making leisure truly creative" for enough kinds of people. All such will find this work endlessly suggestive.

Water Department Rules, San Juan, P. R.

The water accounting system and rules adopted by the Water Department of San Juan, Porto Rico, are published in Spanish under the title "Reglas para el Régimen en la Constabilidad y Control del Negociado del Acueducto." 29 pp. Apply to R. Betancourt, City Auditor, San Juan, P. R.)

Accident Facts, 1930

The current issue of this annual report published by the National Safety Council (20 North Wacker Drive, Chicago) is made up, as usual, of statistical tables and charts with explanatory text. The accident experience for 1929 resembles that of other years in that it shows an increase in deaths by accident, and in deaths by automobiles, over the previous report. The increase in motor-vehicle deaths is very large. Details are fully given, and causes analyzed in the report, in a manner valuable to public authorities and others. (See page 117 of this issue.) 50 pp. (Apply to the Council.)

Highways Handbook, 1929 Edition

The Highway Education Board has again issued a very interesting and useful compilation of data on the growth and present status of highways in the United States and, to some extent, in the world. The scope of the booklet may be indicated by the following specific section headings, in addition to a general summary that includes much condensed information: Federal Aid System; State Highway Systems; County and Local Systems; World Highway Mileages; Highway Use by Automobile and Truck; Uniform Warning and Direction Signs, United States Highways (with colored examples); Highway Films Available; Highway Bibliography; and Organizations Interested in Highway Development. 97 pp. 50c. (Apply to Highway Education Board, 1723 N Street, N. W., Washington, D. C.)

Other Reports Received

BALTIMORE, MD.—Annual Report, Free Public Bath Commission, 1929. 23 pp.

CHICAGO, ILL.—Annual Report, Board of Supervising Engineers, Chicago Traction, year ending January 31, 1930. 118 pp.

CHICAGO, ILL.—Annual Report, Chicago Plan Commission, 1929. 16 pp.

CHICAGO, ILL.—Annual Report, Department of Gas and Electricity, 1929. 58 pp.

EVANSVILLE, IND.—Annual Report, 1929. 66 pp.

MINNEAPOLIS, MINN.—Budget Facts and Financial Statistics for 1930. Issued by the Board of Estimate and Taxation. 48 pp.

OGDEN CITY, UTAH.—Auditor's Annual Report, 1929. 32 pp.

ROANOKE, VA.—Annual Reports, 1929. 96 pp.

WESTMOUNT, QUE.—Annual Reports for the year ending October 31, 1929. 46 pp.

Better Magazines Now Possible for Chambers of Commerce

A SERVICE to chambers of commerce that is filling a great need is being given by John M. Guild and Raymond M. Havens, of Kansas City, through what is known as Community Service Corporation. This is principally through furnishing such organizations with a monthly publication where they now have none or have one of a lower standard than is thus made available to them; but other helpful services are also given.

In every instance the publication bears a local name; for example, *Hamilton's Business*, in Hamilton, Ohio; *Speed*, for Daytona Beach, Fla.; and *Progressive Marshalltown*, in Marshalltown, Iowa. In addition to the local name, the cover always carries an up-to-date local scene, which is changed with every issue.

The publication is interestingly arranged, with a number of pages devoted to strictly local topics in each city—chamber of commerce news—and includes articles of community and national interest from noted authorities. Such men as Julius H. Barnes, William Butterworth, Dr. Julius Klein, Secretary of griculture, Arthur M. Hyde, and others outstanding in business, economics, transportation, agriculture, municipal affairs, etc., have already written for it. Two important features of these contributed articles are their brevity and generous illustration. Moreover, they are written for "Main Street" consumption.

Thirty-six cities are already using this magazine service as an aid to maintaining, at little or no additional cost to the organization, an informed and active chamber of commerce membership and an interested public, with corresponding benefit to the organization, to the community and to the members themselves.

The two men responsible for this interesting undertaking are well known—Mr. Guild as the former General Secretary of the Kansas City (Mo.) Chamber; previously in the same capacity at Dayton, Ohio, and Omaha, Nebr.; a former President of NACOS, and an instructor at the National Institute for Commercial and Trade Executives. Mr. Havens, having been President of Rotary International, is favorably known to Rotarians as "Ray," being in addition a successful business man of Kansas City.

The night map of a modern city is drawn in lines of light

The Map of a Modern City

STREET-LIGHTING engineers are helping make over city maps—helping to develop commercial zones—to attract residents to outward-reaching suburbs—to improve real-estate values and increase retail business.

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The modern map makers are the city-planning expert and the street-lighting specialist. In their capable hands, a program of civic improvement and extension—economically and electrically correct—can be developed for present city needs and future growth. General Electric specialists are widely experienced in this fundamentally constructive work. Their coöperation and the technical resources of General Electric are always at the service of civic officials and promotional organizations. Call the nearest G-E office.

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CONVENTIONS—WHEN AND WHERE

Figures in parentheses following the name of the convention city indicate the estimated attendance, other than local

JULY 9-11.—CLEVELAND, OHIO.
American Society of Civil Engineers. Annual convention. Secretary, George T. Seabury, 33 West 39th Street, New York.

JULY 9-11.—TORONTO, ONT. (2,500)
National Association of Real Estate Boards. Annual convention. Executive Secretary, Herbert U. Nelson, 59 East Van Buren Street, Chicago, Ill.

JULY 10-12.—SAN DIEGO, CALIF. (85)
Association of Pacific and Far East Ports. Convention. Secretary-Treasurer, George W. Osgood, Port of Tacoma, Tacoma, Wash.

JULY 13-19.—PALO ALTO, CALIF. (125)
Western School for Commercial Secretaries. Annual session. Manager, Leonard E. Reed, Chamber of Commerce Building, Seattle, Wash.

JULY 14-17.—LIEGE, BELGIUM.
JULY 18-19.—ANTWERP, BELGIUM.
International Union of Local Authorities. International Congress. General Secretary, E. Vinck, Rue de la Régence, Brussels, Belgium.

JULY 15-19.—LONG BEACH, CALIF.
American Shore and Beach Preservation Association. Annual convention. Secretary-Treasurer, Victor Gelineau, 1 Exchange Place, Jersey City, N. J.

JULY 22-24.—BRADFORD, PA. (400)
Pennsylvania Chiefs of Police Association. Annual convention. Secretary, J. N. Tillard, Police Chief, Altoona, Pa.

JULY 28-30.—ROCHESTER, N. Y. (230)
New York State Association of Chiefs of Police. Annual convention. Secretary-Treasurer, James L. Hyatt, Police Department, Albany, N. Y.

JULY 29-31.—GRAND RAPIDS, MICH. (1,200)
United States Building and Loan League. Convention. Secretary, H. F. Cellarius, 22 East 12th Street, Cincinnati, Ohio.

AUGUST 3-16.—EVANSTON, ILL. (300)
National Institute for Commercial and Trade Organization Executives. Annual session. Secretary, John N. Van der Vries, 607 First National Bank Building, Chicago, Ill.

AUGUST 4.—DULUTH, MINN. (400)
International Association of Chiefs of Police. Annual convention. Secretary, George M. Black, Chief of Police, Wilmington, Del.

AUGUST 12-16.—DENVER, COLO. (300)
International Association of Municipal Electricians. Convention. Secretary, H. N. Lang, P. O. Box 1864, Orlando, Fla.

AUGUST 19-21.—YORK, PA. (200)
League of Cities of the Third Class in Pennsylvania. Convention. Secretary, R. Ross Seaman, City Clerk, Harrisburg, Pa.

AUGUST 19-21.—BURLINGTON, IOWA. (300)
League of Iowa Municipalities. Annual meeting. Secretary-Treasurer, Frank G. Pierce, Marshalltown, Iowa.

AUGUST 19-21.—TRURO, NOVO SCOTIA. (100)
Union of Nova Scotia Municipalities. Annual convention. Secretary, Arthur Roberts, Bridgewater, N. S.

AUGUST 21-22.—SUPERIOR, WIS. (100)
American Water Works Association—Wisconsin Section. Annual convention. Secretary, L. A. Smith, Superintendent of Water Works, City Hall, Madison, Wis.

AUGUST 27-29.—CLEVELAND, OHIO. (100)
National Shade Tree Conference. Sixth annual conference. Secretary-Treasurer, Dr. Rush P. Marshall, Yale University, New Haven, Conn.

AUGUST 27-29.—TORONTO, ONT. (180)
Ontario Municipal Association. Convention. Secretary-Treasurer, H. L. Brittain, 21 King Street East, Toronto, Ont.

SEPTEMBER 8-11.—TORONTO, ONT. (400)
Association of American Cemetery Superintendents. Convention. Secretary, William B. Jones, Superintendent of Highwood Cemetery, Pittsburgh, Pa.

SEPTEMBER 8-10.—HAMILTON, ONT. (110)
Union of Canadian Municipalities. Annual convention. Secretary, Samuel Baker, London, Ont.

SEPTEMBER 9-12.—WINNIPEG, MAN. (1,100)
International Association of Fire Chiefs. Annual convention. Secretary, James J. Mulcahey, Fire Chief, Yonkers, N. Y.

SEPTEMBER 13.—SYRACUSE, N. Y.
New York State Sewage Works Association. Fall meeting. Secretary-Treasurer, A. S. Bedell, State Department of Health, Albany, N. Y.

SEPTEMBER 15-18.—AMARILLO, TEXAS. (300)
Southwest Water Works Association. Annual convention. Secretary, Lewis A. Quigley, Fort Worth, Texas.

SEPTEMBER 16-18.—QUEBEC, QUE. (300)
Canadian Good Roads Association. Annual convention. Secretary-Treasurer, George A. McNamee, New Birks Building, Montreal, Que.

SEPTEMBER 22-25.—ATLANTIC CITY, N. J.
New England Water Works Association. Annual convention. Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

SEPTEMBER 22-24.—BEAUMONT, TEXAS. (350)
Chiefs of Police and City Marshals Association of Texas. Annual convention. Secretary, George A. Smith, P. O. Box 299, Dallas, Texas.

SEPTEMBER 23-26.—MILWAUKEE, WIS. (150)
American Association of Port Authorities. Annual convention. Secretary, Tiley S. McChesney, Room 200, New Orleans Court Building, New Orleans, La.

SEPTEMBER 24-27.—SAN FRANCISCO, CALIF. (150)
International City Managers' Association. Annual convention. Executive Secretary, Clarence E. Ridley, 923 East 60th Street, Chicago, Ill.

SEPTEMBER 25-26.—PATERSON, N. J. (500)
New Jersey State League of Municipalities. Convention. Executive Secretary, Sedley H. Phinney, 34 West State Street, Trenton, N. J.

SEPTEMBER 29-OCTOBER 2.—ST. LOUIS, MO. (275)
American Institute of Park Executives and American Park Society. Annual convention. Executive Secretary, William H. Walker, 1310 Tecumseh Avenue, South Bend, Ind.

SEPTEMBER 29-OCTOBER 3.—PITTSBURGH, PA. (5,000)
National Safety Council. Annual Safety Congress. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 1-3.—ST. LOUIS, MO. (450)
American Society of Civil Engineers. Fall meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

OCTOBER 6-11.—ATLANTIC CITY, N. J. (600)
Playground and Recreation Association of America. Annual convention. Secretary, Howard S. Braucher, 315 Fourth Avenue, New York.

OCTOBER 6-11.—WASHINGTON, D. C. (2,500)
Permanent International Association of Road Congresses. Sixth International Road Congress. Secretary-General, Thomas H. MacDonald, American Organizing Committee, 1723 N Street, N. W., Washington, D. C.

OCTOBER 7-10.—WASHINGTON, D. C. (2,500)
American Road Builders' Association. International Exposition of Highway Equipment and Material. Secretary-Director, Charles M. Upham, National Press Building, Washington, D. C.

OCTOBER 7-10.—RICHMOND, VA. (500)
Illuminating Engineering Society. Annual convention. General Secretary, A. B. Oday, 29 West 39th Street, New York.

OCTOBER 9-11.—LOUISVILLE, KY. (200)
International Association of Street Sanitation Officials. Annual convention. Secretary, A. M. Anderson, 100 North LaSalle Street, Chicago, Ill.

OCTOBER 10-16.—LOUISVILLE, KY. (500)
American Prison Association. Annual congress. General Secretary, E. R. Cass, 135 East 15th Street, New York.

OCTOBER 13-17.—RICHMOND, VA. (200)
American Society for Municipal Improvements. Annual convention. Secretary, C. W. S. Sammelman, 4359 Lindell Boulevard, St. Louis, Mo.

OCTOBER 16-17.—SPRINGFIELD, ILL. (300)
Illinois Municipal League. Annual convention. Secretary, A. D. McLarty, Urbana, Ill.

OCTOBER 19-22.—TULSA, OKLA. (325)
National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, William J. Russell, Chamber of Commerce of the Borough of Queens, Long Island City, N. Y.

OCTOBER 25-27.—FORT WORTH, TEXAS. (45)
Conference of State Sanitary Engineers. Secretary-Treasurer, R. E. Tarbett, U. S. Public Health Service, Washington, D. C.

OCTOBER 27-31.—FORT WORTH, TEXAS. (800)
American Public Health Association. Annual meeting. Executive Secretary, Homer N. Calver, 370 Seventh Avenue, New York.

NOVEMBER 10-12.—CLEVELAND, OHIO.
Governmental Research Association. Annual meeting. Secretary-Treasurer, Russell Forbes, 261 Broadway, New York.

NOVEMBER 10-12.—CLEVELAND, OHIO.
National Municipal League. Annual convention. Secretary, Russell Forbes, 261 Broadway, New York.

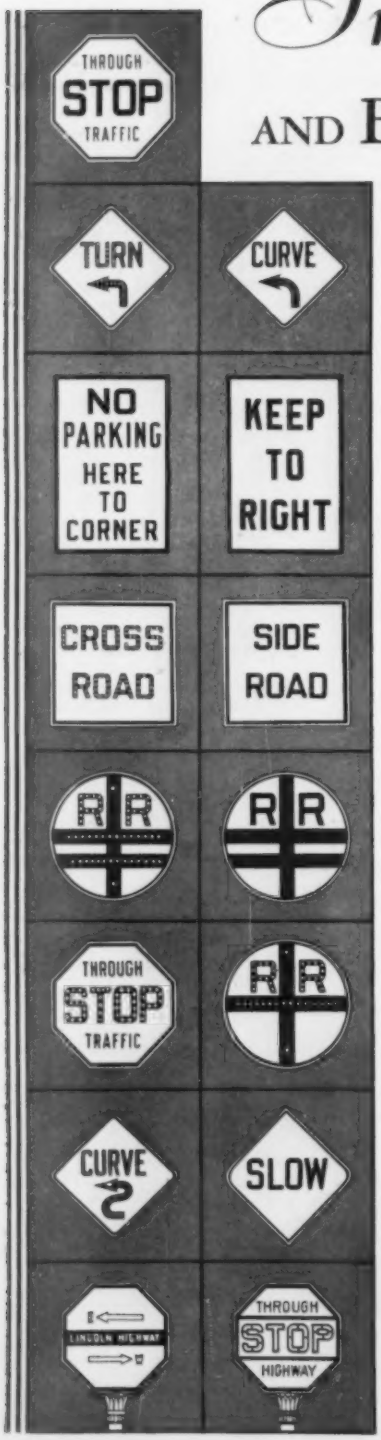
JANUARY—ST. LOUIS, MO. Date to be determined later.
American Road Builders' Association. Annual meeting. Secretary-Director, Charles M. Upham, National Press Building, Washington, D. C.

DECEMBER 1-5.—MEMPHIS, TENN. (850)
The Asphalt Institute. Ninth Annual Asphalt Paving Conference. Managing Director, J. E. Pennybacker, 801 Second Avenue, New York.

Association of Asphalt Paving Technologists. Joint meeting with The Asphalt Institute. Secretary-Treasurer, C. A. Mullen, 980 Saint Antoine Street, Montreal, Que.

Chamber of Commerce Secretaries and Others

who are interested to develop the convention facilities of their cities, will find of value the figures showing estimated attendance from outside the city at many of the conventions listed above. These figures, which now become a regular feature of the convention calendar, will help to determine the possibility in any given city of securing and accommodating such gatherings.



Protect THE HIGHWAYS AND BYWAYS *with Eagle Signs*

Reduce Accidents, Save Lives and Property with these New Signs made by an Organization of Long Experience in Traffic Signaling Equipment.

A Sign must be attractive and durable, of course, but primarily it must serve to WARN—This the new EAGLELUME (self-illuminated sign) does better than any other type. Its brilliant warning flash cannot escape attention.

In addition to EAGLELUME, these signs are also available in the EAGLERAY (headlight illuminated type) and the unilluminated STANDARD design.

Eagle Signs conform to the regulations of the American Engineering Council and the National Conference on Street and Highway Safety.

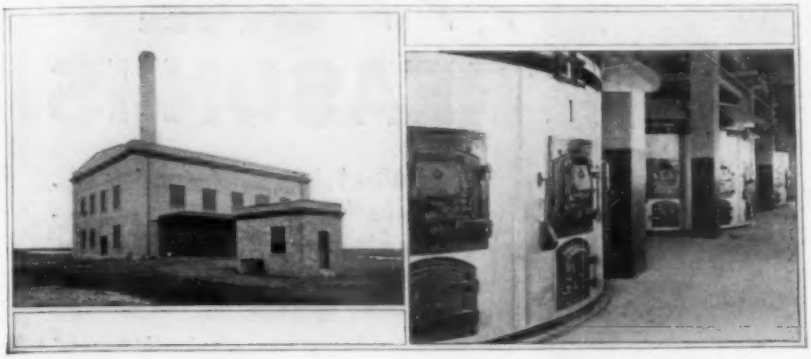
Write for your copy
of SIGNAL SIGN REFERENCE BOOKLET

EAGLE SIGNAL SALES CORPORATION

MOLINE, ILLINOIS *A Subsidiary of The Gamewell Company*

NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings



LEFT, EXTERIOR OF NYE INCINERATOR INSTALLATION AT ATLANTIC CITY
RIGHT, INTERIOR OF PLANT, SHOWING NYE CIRCULAR FURNACES

Garbage Incinerators with Circular Furnaces

Among the unique features of Nye incinerators, made by the Nye Odorless Incinerator Corporation, Albany, Ga., are the Nye circular furnaces, which have been on the market for several years and have proved their value. These steel-encased, firebrick-lined, circular furnaces have several distinctive features. One of them is the arched dome, which exerts the same structural pressure equally in all directions and produces the smallest bearing pressure on the supporting walls.

This type of construction also permits the largest possible opening in the top of the furnace without injury to the structure, enabling the largest trucks to discharge their loads directly into the furnace without handling and in the shortest possible time. Material discharged in this manner forms a cone and automatically rolls down on the grate bars around the perimeter of the furnace. The circular furnaces with grate bars practically all around the perimeter leave no dead pockets or cold spaces and lend themselves readily to the use of mechanical arrangements.

The furnaces are entirely separate from the floor and walls of the building, so that these surfaces cannot be affected by the heat.

Difficult Traffic Problem Solved in Bellevue, Ohio

U. S. Highway No. 20, passing through Bellevue, Ohio, on Main Street, produces a very heavy through traffic which must be moved continuously in both directions with minimum interruption. As shown by the accompanying diagram, this is a difficult problem because of the difference in the length of the blocks. Traveling from west to east, the first block from Main and Kilbourne Streets to Main and Southwest Streets is 160 feet long, while the next block from Main and Southwest Streets to Main and Sandusky Street is 390 feet in length. To further complicate the problem, Main and Southwest Streets are also joined by Monroe Street at an angle of approximately 45 degrees, producing a five-point intersection which requires three-period control, which, of course, would operate on the same cycle as used for the two-period control at all other intersections.

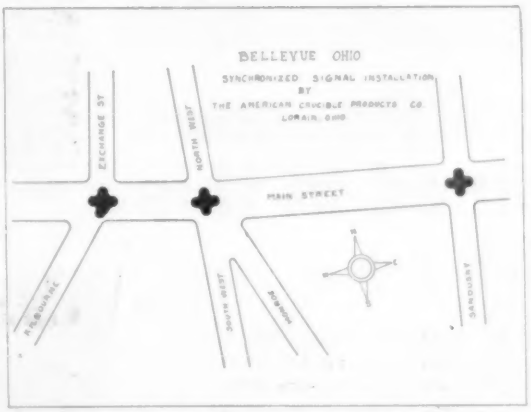


DIAGRAM OF THE MASTER SIGNAL AND CONTROL SYSTEM INSTALLED IN BELLEVUE, OHIO

After careful study, G. A. Williams, Director of Safety, Bellevue, secured a satisfactory solution of the problem through the use of master signals and controls made by the American Crucible Products Co., Lorain, Ohio.

The equipment used is the latest type of master coordinating controls located at each intersection, all of which are held in step with each other or synchronized by one control of the group which acts as the master timer, controlling the cycle period of the group in addition to operating its own signal. The system eliminates the necessity of an expensive master timer or control to coordinate all signals. These controls are so designed as to take up automatically the proper cycle of operation, following an interruption in operation of the entire system or any part of it, regardless of the nature of the interruption, even including cases of emergency or power shutdown.

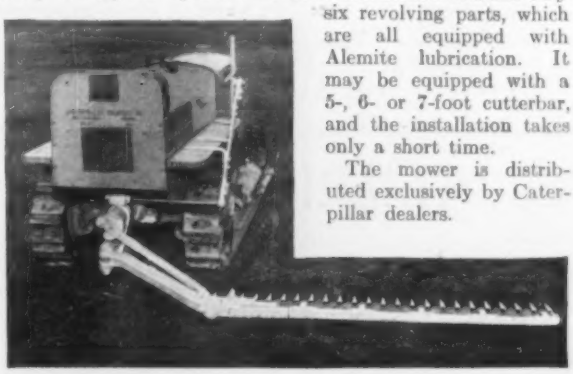
Heavy-Duty Mower for Tractor Attachment

A heavy-duty high-speed steel mower built to stand the excessive punishment encountered on any heavy mowing job is made by the Rawls Manufacturing Co., 202 Iowa Avenue, Streator, Ill., for attachment to Models, Ten, Fifteen and Twenty Caterpillar tractors.

This mower cuts at any angle above or below horizontal or at horizontal and has an automatic trip permitting the cutterbar to swing behind the tractor by the shearing of a wood pin when an obstruction is met. Only a few minutes is needed to readjust the mower, replace the wood pin and resume operation. A hand crank mounted on the right running-board makes it possible to quickly and easily raise and lower the cutterbar for adjusting to various slopes.

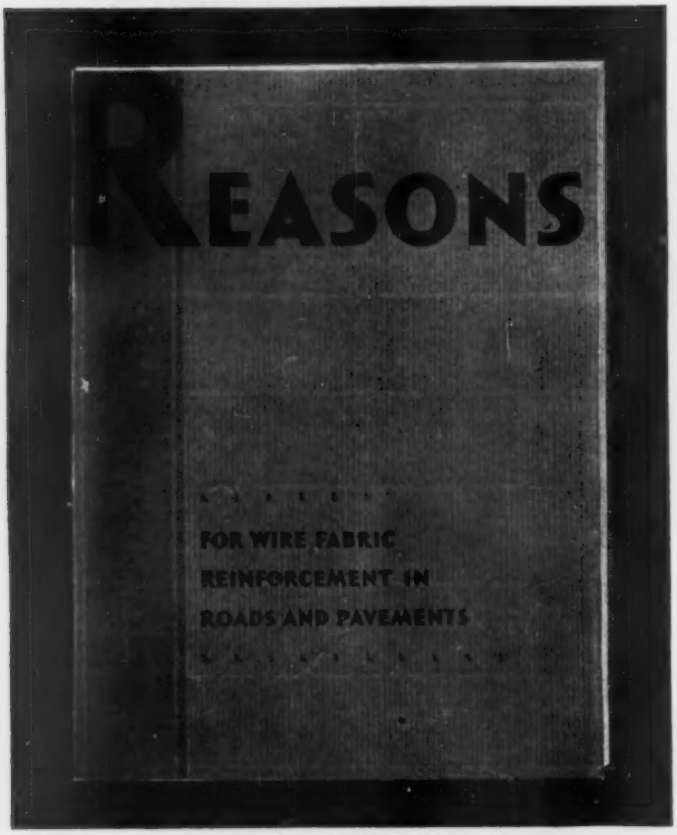
The mower is attached over the transmission case cover rear power take-off of the tractor and has only six revolving parts, which are all equipped with Alemite lubrication. It may be equipped with a 5-, 6- or 7-foot cutterbar, and the installation takes only a short time.

The mower is distributed exclusively by Caterpillar dealers.



THE RAWLS HEAVY-DUTY MOWER ATTACHMENT FOR CATERPILLAR TRACTORS

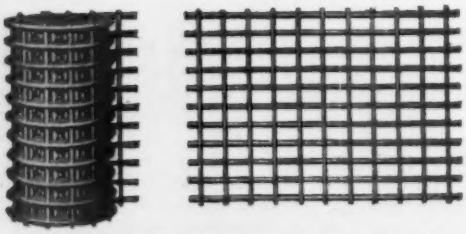
BY EMINENT HIGHWAY AUTHORITIES



▸▸▸ ONE REASON IS

"Wire Fabric Reinforcement prevents the development of microscopic cracks into visible cracks, by reason of small members, closely spaced."

—Excerpt from page nine of "Reasons"



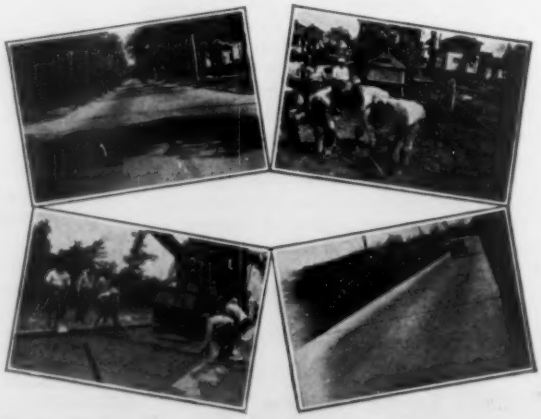
Electric Welded Mesh—In Rolls or Sheets

Nine More Reasons are Outlined in this Booklet ▸▸▸

THE country's most renowned authorities on highways are contributors to the pages of this book. Clearly and logically they explain why wire fabric should be used in all concrete roads and pavements and in the concrete base of other types of surfaces.

With this data in your files, you will have constantly available valuable information, that outlines the merits of wire fabric reinforcement. The facts are authentic and based on years of actual experience.

A copy of "Reasons" is yours for the asking—and you will not be obligated. Just address any of our sales offices which are listed below.



AMERICAN STEEL & WIRE COMPANY

SUBSIDIARY UNITED STATES STEEL CORPORATION

208 S. La Salle Street, Chicago — 30 Church Street, New York

Other Sales Offices: Atlanta Baltimore Birmingham Boston Buffalo Cincinnati Cleveland Dallas Denver Detroit Kansas City Memphis Milwaukee Minneapolis-St. Paul Oklahoma City Philadelphia Pittsburgh Salt Lake City St. Louis Wilkes-Barre Worcester

U. S. Steel Products Co.: San Francisco Los Angeles Portland Seattle Honolulu

Export Distributors: United States Steel Products Co., 30 Church St., New York City

Photo by Alfred Brown, Brookline, Mass.

W. R. PHILLIPS, ASSISTANT TO PRESIDENT, THE GAMEWELL CO.

Phillips Now Assistant to Gamewell President

The Gamewell Co., Newton Upper Falls, Mass., has announced that W. R. Phillips, formerly Vice-President and General Manager of the New England Portland Cement Co., Boston, Mass., has recently joined the company in the capacity of Assistant to President V. C. Stanley. Mr. Phillips has also been associated with the American Lime & Stone Co., of Philadelphia, Pa., and with the National Lime Association, Washington, D. C., prior to which he was engaged in the engineering and contracting field in various sections of the country and operated a company of his own.

A new sales and service office has been opened by the Gamewell Co. at 1424 Park Bldg., Pittsburgh, Pa., to provide better fire-alarm and police-signal service for municipalities in western Pennsylvania and West Virginia.

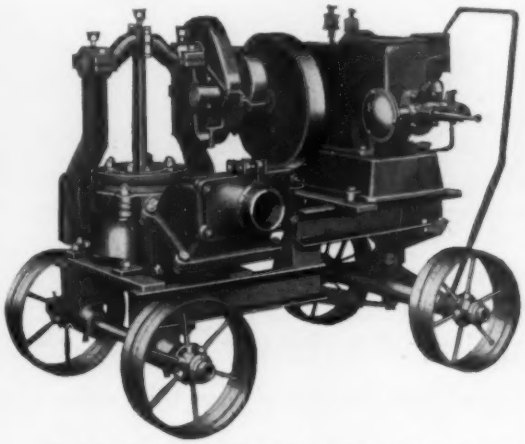
G. F. Penniman has just been appointed Manager of the Construction Department of the Gamewell Co., to fill the vacancy created by the transfer of H. I. Turner, who was formerly Manager of this department, to the Eagle Signal Sales Corp.

A New Closed and Open Discharge Diaphragm Pump

Drainage and emergency pumping call for fast and steady operation of drainage pumps. The new Barnes closed diaphragm pump, which may be changed from open to closed discharge in two minutes, has been announced by the Barnes Manufacturing Co., Mansfield, Ohio. With this pump it is possible to spill the water at the pump or discharge it at a distance away from and higher than the pump as the occasion may require.

The threaded discharge outlet for a 4-inch hose coupling is hinged to the open discharge spout. It is held in place when in use by four bolts. For jobs where the open spout is all that is required, the hose outlet is swung back out of the way. It is always conveniently at hand, and the change is quickly made.

Instead of spilling mud over the diaphragm to leave a layer of grit in the fold of the diaphragm, the water and its load of mud and sand travels through the suction chamber and out through the discharge valve. With every down stroke the patented bottom plate of the plunger kicks the mud out with the water. To replace the diaphragm it is necessary only to remove the four bolts that hold the divided clamping ring and the four brass cap nuts that clamp the diaphragm to the plunger plate. The special shape of the top plunger plate relieves the diaphragm of pressure on the downstroke. Power transmission from the Fuller & Johnson or LeRoi gas engine is through stub tooth cut steel gears running in a bath of oil. Built as a unit with the pump, the power jack eliminates misalignment. All bearings are adjustable as well as replaceable. The crankshaft and connecting rod bearings are bronze-backed shells heavily shimmed. Both the suction and discharge valves are of the rubber flap type. An easily removed plate gives quick access to the suction valve, should it be necessary to remove an obstruction drawn through the suction hose. The entire valve can be removed and replaced without disturbing any of the hose connections.



THE NEW BARNES CLOSED DIAPHRAGM PUMP

The various models have capacities from 3,000 to 26,000 gallons per hour, with a maximum lift of 25 feet and a maximum total head of 35 feet.

Emergency Service of Fire Departments

Every fire chief knows that emergencies are constantly arising which require the services of his men and equipment, and such service is often a tax on the ingenuity of himself and his men, as well as a severe test of his equipment.

Recently, H. L. Taylor, Fire Chief of Rome, Ga., received a call from officials of Lindale, Ga., a neighboring town, where a spring from which the town took its water-supply had become flooded with muddy water, and, as a consequence, the spring water was not fit for consumption.

Chief Taylor immediately responded to the call with several of his men and the Department's 750-gallon American-LaFrance pumper, made by the American-LaFrance & Foamite Corporation, Elmira, N. Y. Upon arrival at the flooded spring, it was found that because of the conditions of the ground and because the spring was surrounded by a steel fence, it was impossible to bring the apparatus nearer than 40 feet. The problem was solved by fitting an iron pipe leading from the spring to the suction hose of the pumper. This hook-up necessitated a lift of approximately 23 feet, a severe test for any apparatus, and especially for one which had seen hard service for 16 years.

At 9 A. M. the motor was started and the pumper discharged the water from the spring through three lines of 2½-inch hose. At 5:30, after continuous pumping for nearly 9 hours, the spring was given a careful inspection. It was found that the muddy condition had been alleviated and the water was again fit for use.

AMERICAN-LA FRANCE PUMPER OF THE ROME FIRE DEPARTMENT, PUMPING MUDDY WATER OUT OF THE SPRING AT LINDALE, GA.

RIGHT-OF-WAY FOR ALL TRAFFIC AT BUSY INTERSECTIONS

Intersection of Routes 4 and 25, near Rahway, N. J.

HIGHWAY congestion, where heavily-traveled arteries cross, is entirely eliminated by providing two levels for traffic at the point of intersection. A system of curved roadways, as shown above in the illustration, enables traffic to proceed in any direction desired —even in an *opposite* direction—without impeding the steady flow of vehicles in any lane.

To permit maximum legal speed *with safety,* these grade separation areas should be of portland cement concrete. Its smooth but gritty surface provides sure-footed traction on the curves; and its inherent strength resists wear, assuring minimum annoyance and expense from maintenance.

PORTLAND CEMENT *Association*

Concrete for permanence

33 WEST GRAND AVENUE
CHICAGO

Why not remember to mention THE AMERICAN CITY?

Importance of Soil Conditions

An interesting paper on "Bearing Value of Soils—Foundation Engineering," read by C. C. Whittier, Engineer of the Robert W. Hunt Co., Chicago, Ill., before a recent convention of the National Scale Men's Association has been reprinted from the *Scale Journal* by the Robert W. Hunt Co. for free distribution.

Much of the material in this paper, which briefly covers methods of test and application of test results, is new. The various sections of the paper deal with soil pressure, soil reaction, soil classification, soil character, soils under load, foundations, soil tests, test interpretation, settlement, the new science of foundations, the rules, differential settlement, shear, total settlement, application of tests, maximum soil reactions, causes of settlement, practical applications and examples of failures.

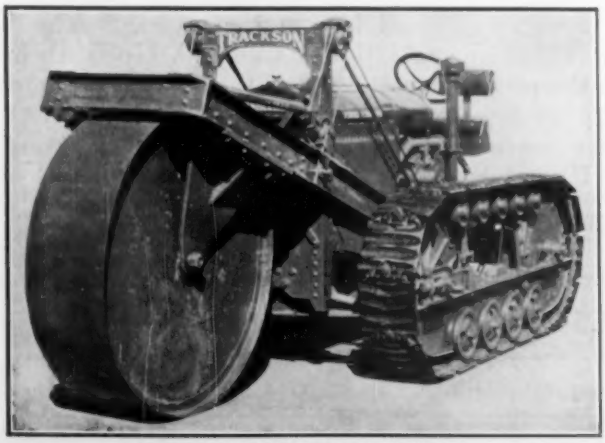
The author sums up the paper in his closing paragraph: "One of the safe rules of foundation engineering is: 'Make the soil quality tests first, and design the foundation of the scales and other structures to meet the existing soil conditions.'"

A Trench Roller

An interesting recent development in construction equipment is the new Trackson trench roller made by the Trackson Co., 500 Clinton Street, Milwaukee, Wis., which provides a simple, effective and economical method of packing down dirt over newly laid cable, conduit or pipe lines. It is finding favor with city officials, public utility superintendents, engineers and contractors because it eliminates hand tamping and puts back all of the dirt.

The roller is built for mounting on the Model DH Trackson McCormick-Deering crawler tractor. It consists of a wide steel roller, filled with concrete, which weighs from 3,000 to 4,000 pounds, the weight varying to meet the requirements of different soil conditions. The wide crawler tracks of the tractor easily straddle the trench, and their low ground pressure, of less than 4½ pounds per square inch, eliminates the danger of time-delaying cave-ins.

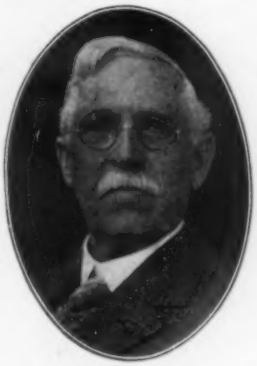
The operating and maintenance costs of the roller are low, and by replacing as many as twenty or more laborers with hand tampers, the equipment pays for itself within a short time. On the average job a single unit will roll as much as 2,600 linear feet of 4-foot trench in a day, packing down the dirt as fast as it is shoveled or backfilled into the trench. It may be used for rolling over all kinds of underground lines without damaging the cable or casing, providing, of course, that sufficient dirt is thrown over the pipe before it is rolled. The first layer should be from 10 to 20 inches in depth, depending upon the nature of the soil, and the rest of the dirt is usually rolled in 6-inch layers.



THE TRACKSON TRENCH ROLLER

Winton Graduated 50 Years Ago

Henry D. Winton, Secretary of the Hersey Manufacturing Co., South Boston, Mass., attended the 63rd Commencement of the Massachusetts Institute of Technology on June 10 as a member of the class of 1880, the 50-year class. Sixteen members of this class are living, six of whom attended the Commencement.



HENRY D. WINTON, SECRETARY, HERSEY MANUFACTURING CO.

Following his training at M.I.T. and after extensive studies in electricity and the development of railway signaling, Mr. Winton joined the Hersey Manufacturing Co.'s force over 40 years ago and has created many notable advances in the water-meter industry.

Soper to Study Sanitation in Europe

At the request of the Committee of Twenty on Street and Outdoor Cleanliness, appointed by the New York Academy of Medicine, to help make New York a clean city, Dr. George A. Soper, consulting engineer and a member of the Committee, sailed recently to make a study of municipal sanitation among the cities of Europe. His investigations will be in extension of the studies made last year and will be reported next fall.

A New Cone-shaped Crack Filler

In response to numerous requests for a cone-shaped crackfilling pot for use on asphalt and concrete pavements, Littleford Bros., Cincinnati, Ohio, have developed the Littleford Style 86-B conical crack and joint filler, which is made in the shape of an inverted cone, 25 inches high and tapering from 8 inches in diameter down to the opening. The size of the opening is adjustable from ⅛-inch to ½-inch, and the flow of material is controlled by a valve in the bottom of the cone. This valve is easily operated from the handle of the pot and is ordinarily held in a closed position by its own weight. The filler is made of steel with welded seams and has a capacity of two gallons.

LITTLEFORD CRACK AND JOINT FILLING POT

Detroit Pumping Plant Installs Westinghouse Switchgear

The contract for the electric switching equipment for the pumping and power plants of the Springwells Station of the city of Detroit has been awarded to the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. This station will be the largest single pumping station ever built and will be controlled by Westinghouse switchgear throughout.

The motor control equipment has been simplified wherever possible by using standard equipment rather than any form of special apparatus. The control includes about 160 steel switchboard panels, 75 current-limiting reactors for power bus and motor starting, 27 steel circuit-breaker cubicles, and 53 metal-clad switchgear units. In addition, there are included three 300-kilowatt and three 50-kilowatt motor generator sets for excitation and auxiliary service, and all field rheostats and induction motor secondary control. Two Westinghouse stokers will also be installed.

The main switchgear controlling 4,600-volt service consists of Type B-16 and B-26 oil circuit breakers in 53 metal-clad vertical lift type switching units, each unit consisting of a stationary structure and a vertical lift type breaker. The auxiliary switchgear consists of 27 stationary steel-enclosed cubicles for the control of the 460-volt auxiliary motors and starting equipment.

Simplex Appoints New Jacksonville Manager

The Simplex Wire & Cable Co., 201 Devonshire Street, Boston, Mass., has appointed C. J. Zeigler as Manager of its Jacksonville office, to succeed Miss F. H. Pettee, who was transferred to the head office in Boston. The change became effective June 15, 1930.

Interior and exterior views of the Boston, Massachusetts, Fire Headquarters

Boston takes no chances with fire alarm apparatus. Housed in a magnificent building is the Department's big Gamewell control operating board, one of the outstanding installations in America. It is hard to take one's eyes off the front of that board.

But look behind it!

Look at the intricate network of signal cables that carry the signal circuits to every red call box in the system. Those cables are Hazard Municipal Signal Cables. Upon their quality depends the proper functioning of the whole elaborate system and they were selected because of the outstanding service they have given in hundreds of fire alarm systems throughout the United States.

HAZARD INSULATED WIRE WORKS

Division of The Okonite Company

WORKS: WILKES-BARRE, PA.

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When you write for that catalog, kindly mention THE AMERICAN CITY.

J-M ASPHALT BRIDGE PLANK AS INSTALLED ON THE WEST RAILROAD AVENUE BRIDGE AT EVANSTON, ILL.

Asphalt Plank for Bridge Floors

Asphalt plank is an intimate mixture of asphalt, fiber and mineral matter combined by a process of thoroughly mixing the raw materials in a steam-jacketed tank equipped with powerful agitators to form a tough, fibrous, homogeneous mass too stiff to flow, although in a heated condition. In the form of balls, this mass is conveyed to a machine where powerful augers force it through a die conforming in cross-section to the finished product. Upon leaving the die the column passes to a submerged conveyor, in which it is cooled to a degree that permits cutting, following which the plank is sanded to prevent sticking and is stacked in the same manner as so much lumber. Standard thicknesses include 1, 1¼, 1½ and 2 inches, widths are 8 or 10 inches, and standard lengths 6 feet.

Asphalt plank contains not less than 30 per cent asphalt, practically all of which is carried either by animal and vegetable fiber or by Celite, the mineral filler which plays an important part in Johns-Manville asphalt plank, made by the Johns-Manville Corporation, 292 Madison Avenue, New York.

The large volume of Celite used in J-M asphalt plank performs two important functions. It absorbs asphalt and increases the stability of the plank, making it less brittle at low temperatures and giving a fine-grained mass that coalesces rapidly. It also reduces the weight of the finished product, J-M plank weighing only 7.0 pounds per cubic foot.

Asphalt plank is a relatively soft material and is readily marked by calks on horses' shoes or other sharp objects, the indentations being rapidly ironed out by traffic. It is resilient and slightly plastic, but its fibrous nature prevents corrugation, as it cannot flow under traffic. The joints between the planks soon knit together under traffic, and the surface assumes a sheet-like appearance.

It is readily applied over either wood or concrete, being nailed to the wood and cemented to concrete. Cutting of the plank to fill irregular spaces or to space out properly is readily accomplished by ordinary bladed tools such as hatchets or wide-bladed chisels.

It is not abrasive and does not dust. It provides good traction and is less slippery when wet than many types of pavement. Among its other characteristics are immunity from decay, non-absorption of moisture, absence of grain and freedom from splitting, warping and checking. It wears well and permits a material reduction in the weight of the floor system.

An Automatic Traffic Whistle

Intended to check motorists who disregard lights and to speed up traffic by awakening dreamy drivers to the fact that the green light has flashed for them, a police whistle, automatically timed to sound a shrill blast just before traffic signal lights change color, has been installed in Scotia, N. Y., across the river from Schenectady.

The device was invented by C. R. Duers, of Glens Falls, and is being made by the General Electric Co., Schenectady, N. Y. It is operated by electricity, either manually or automatically, just as the lights may be. Power released by a General Electric magnetic coil moves a piston within a cylinder, the resulting blast of air sounding a regulation police whistle.

Readily adaptable to any existing traffic lights, installation of the whistle is not difficult. All working parts are housed in an aluminum case, fully protected from the weather.

Self-Winding Time Switch for Circuit Control

For use to turn on and off street lighting, traffic lights, floodlighting, airway markers and any other electrical circuits that can be operated on a predetermined time basis, R. W. Cramer & Co., Inc., 136 Liberty Street, New York, is distributing the Sauter single-throw time switch, in which the main switch is motor-operated, air-break, rotary and self-winding.

The motor is of the universal series-wound type, with a jumper arrangement on the field coils to permit operation on 115- and 230-volt direct current or alternating current of any frequency. The clock has a 4-day mainspring, but is rewound automatically twice every 24 hours, and can be furnished with a Sunday cutout, automatically causing the switch to suspend its functions every seventh day. A single 24-hour dial serves both for time setting and for program setting.

THE SAUTER TIME SWITCH

Where it is desired to have the operations conform to a constant schedule, the plain dial is used. For lighting circuits on an all-night or part-night schedule, the astronomic dial is recommended, as it automatically resets the daily operations to conform to local sun time, to dusk or to dawn, or to both.

Improved Voting Machines

Not only does a voting machine, because of its mechanically accurate count, discourage election contests, but it also permits a re-canvass in a short time as compared with hours, days or even weeks when paper ballots are used. In the voting machines made by the Automatic Voting Machine Corporation, Jamestown, N. Y., the results of each election are safely and permanently recorded in a compartment inside the machine, protected by a steel door, locked and sealed against manipulation.

This machine stands about 6 feet 9 inches high and 10 inches deep and is contained in a specially designed, all-metal hoist packing case, which is raised and lowered by means of a crank. The case is constructed of the best quality pickled cold-rolled sheet steel. For convenience in moving the machine, the case is equipped with cast iron rollers on the bottom and iron handles on the four sides.

FRONT VIEW OF HOIST MACHINE READY FOR VOTING
The machine may be lowered to approximately half this height for storage

How Police Motorcycles Give You More Patrolmen

MOTORCYCLE equipment multiplies the man-power of your police force.

A motorcycle officer will cover as much ground as four men on foot, and cover it twice as often. He actually releases foot patrolmen for other duties, greatly increasing the efficiency of the force. His swift Harley-Davidson enables him to keep a wide area under constant patrol, while the "infantry" of the force is concentrated in downtown sections where it belongs.

No modern police force is complete without a motorcycle squad — and the endorsement of more than 3,000 departments establishes the Harley-Davidson as the police motorcycle par excellence.

HARLEY-DAVIDSON MOTOR CO.
DEPARTMENT M MILWAUKEE, WIS.

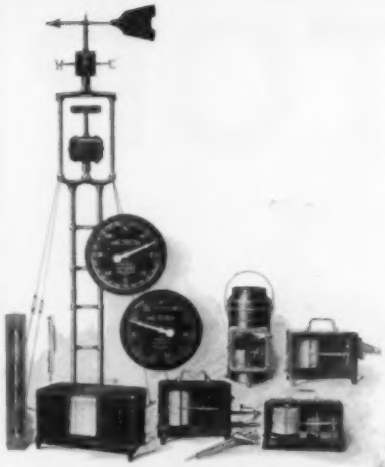
AMERICA'S POLICE MOTORCYCLE

Harley-Davidson 9-Point Police Service

1. Controls traffic
2. Patrols outlying areas
3. Pursues law-breakers
4. Makes emergency calls
5. Curbs illegal driving
6. Enforces parking ordinances
7. Guards school crossings
8. Releases foot patrolmen
9. Leads parades and escorts

HARLEY-DAVIDSON
The Police Motorcycle

Write for this booklet
Here are all the facts you want about America's Police Motorcycle, in attractive and easily read form. A free copy is waiting for you.



COMPLETE FRIEZ WEATHER-INDICATING EQUIPMENT FOR LARGE AIRPORTS

Weather Knowledge for Airports

A good airport is much more than a landing field. It should be a distributing point of complete, accurate and up-to-the-minute weather information of value to the flier. The United States Government through the Department of Commerce has given full recognition to the necessity of accurate weather observation at airports by requiring that all fields under its supervision shall be equipped with at least a minimum of meteorological instruments if a satisfactory rating is to be obtained.

Julien P. Friez & Sons, Inc., Div. of Consolidated Instrument Co. of America, Inc., Belfort Observatory, Baltimore, Md., is prepared to meet the maximum and minimum requirements of all airports.

For large airports on important air lines a complete set of instruments is offered. This equipment, in addition to permitting visual observation of all local weather conditions, records these conditions graphically on charts. Wind direction and wind velocity are indicated on dials, several of which may be accessibly located at various parts of the field. Every change in direction and velocity of wind is recorded graphically on a rolled strip of paper. The recorder which makes this graphic chart of the wind may be accessibly located near the dials. The wind vane and anemometer which transmit the indications to the dials and recorder electrically by means of self-synchronizing motors, may be placed at any distance from the dials and recorder, a mile or more away, if desired.

Graphic records are also made of barometric pressure, humidity, temperature and rainfall. In addition, a mercury barometer, a sling psychrometer, a maximum and minimum thermometer and a standard mercury thermometer are included to check the graphic records of barometric pressure, humidity and temperature.

For the average airport, equipment is offered which permits visual observation of all local meteorological conditions and, in addition, records graphically on charts barometric pressure and temperature. It differs from the more complete equipment in that graphic records of wind direction, wind velocity and rainfall are omitted.

Wind direction and wind velocity are indicated on dials, and barometric pressure and temperature are recorded graphically on charts. Humidity is determined by the sling psychrometer, and the amount of rainfall by the rain gage. The maximum and minimum thermometer and the mercury thermometer give information on the extremes of temperature and the temperature at the mement.

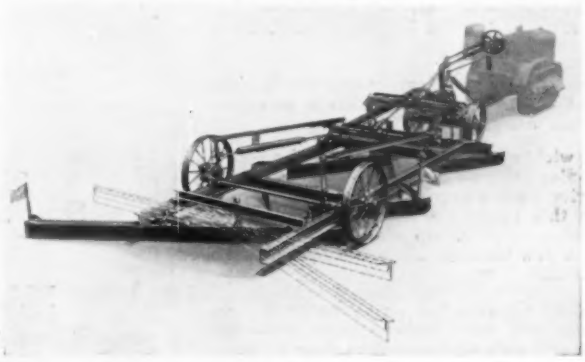
Two New Grading Machines

Two new one-man-control machines for smoothing roads, shaving-off ridges, spreading surface material evenly over the road and filling in hollows, have been announced by the Caterpillar Tractor Co., San Leandro, Calif., in the Twenty Planer and the Fifteen Trailer Patrol.

The Twenty Planer, with its seven blades, spreads material from the feather-edge at the shoulder to the correct thickness in the center of the road.

The Fifteen trailer patrol is a broad-bladed grader for maintenance work.

Either machine is controlled by the driver of the Caterpillar tractor, who sits on a cushioned side seat so that the controls are easily reached and the operator has a clear vision of the work.



THE CATERPILLAR TWENTY PLANER

Truck with Bevel Gear Driving Axle

With eight speeds forward and two reverse, the Freeman four-wheel-drive truck, made by the Freeman Motor Co., Detroit, Mich., has a speed to suit every hauling condition. It has gear ratios of 8½ to 1 in high, and 155 to 1 in low. Power is transmitted to the front and rear axles through a transfer case, securing an even distribution of power front and rear, thereby reducing gear wear and increasing the tire mileage.

For these four-wheel-drive, four-wheel-steer trucks a new type of drive has been developed, being a bevel design front-steer-drive running in oil in weatherproof housings, permitting greatest ease in steering. They are made with 3 to 3½-ton dump chassis, 5-ton freighter chassis or 7½ to 10-ton freighter chassis.

A New Line of Underbody Hoists

A new line of seven underbody slant type hoist models of all-steel construction has been developed by the Wood Hydraulic Hoist & Body Co., Detroit, Mich., providing a hoist for every chassis capacity from one ton up.

Smooth, easy, quick lifting of loads is accomplished by the rolling wedge principle, which is standard Wood hoist design and construction. The powerful outward thrust of the piston rod is transformed into greater lifting force by the action of the rollers on the cams, which are mounted on special seamless steel tubular supports and are attached to the longitudinal body frame members by pressed steel brackets. The greater lifting power is gained by the slanting position of the cylinder. The hoist begins its lifting action at a point ahead of the load center and requires less pressure to lift even the heaviest loads. By applying the lifting force to the longitudinal members of the body subframe, which is the strongest part of the body, undue stress or strain on the hoist, body and chassis are avoided.

The cylinder supports, both front and rear, are drop-forged steel. Stay rods have been eliminated and the hoist front support is drop-forged steel of monopiece construction. The gear pump, driven by a power take-off attached to the truck transmission, pumps oil under pressure into the cylinder, forcing the piston and rod outward. The pump draws its oil supply from the low-pressure end of the cylinder, which is made of wrought steel, accurately bored and ground.

Two levers in the driver's cab give complete control and accurate, fast dumping of loads. The hoist is raised, lowered or held in any intermediate position by operating these levers, stopping automatically at fully raised and fully lowered positions.

THE WOOD UNDERBODY SLANT TYPE HOIST

A modern radio police alarm system to meet your budget requirements

The criminal classes are cleverly organized. The one way to defeat their vicious attacks is to organize your defense along modern lines.

At a cost within the limits of your budget a De Forest Radiophone Police Alarm System can be installed to give your community the protection it needs. With this modern system every police car in your department picks up clearly spoken messages within a few seconds after headquarters receives the alarm.

The De Forest Company is an authority on municipal, county and state radio system problems. Upon request and with due regard to your personal standing, one of our representatives will be glad to study your local situation and outline a suitable plan of protection.

It's important to get the full details

You will find the complete story about the De Forest Radiophone Police Alarm System in our new booklet, "The Modern Way to Apprehend Criminals and Reduce Crime." Write for a copy and see how more than forty American communities are getting a patrol coverage and protection impossible by any other method.

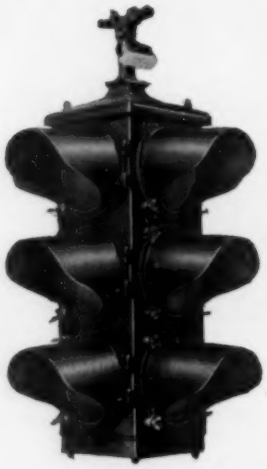
Custom-built

de Forest

RADIOPHONE POLICE ALARM SYSTEM

DE FOREST COMPANY, PASSAIC, N. J.

STOP



MASTER TRAFFIC CONTROL

CAN BE OBTAINED ONLY BY THE USE OF

MASTER

Signals and Controls
Synchronous or Coordinated Operation

MASTER ENGINEERS

Have pioneered and developed the following outstanding improvements in construction and operation

1. **No Phantom Optical System**
2. **Chromium Reflector**
3. **Dustproof Construction**
4. **One-Piece Visor and Door**
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7. **Induction Armature Motor**
8. **Promet Oilless Bronze Bearings**
9. **Semi-Vertical Bulb Mounting**
10. **Self-Contained Signal**
11. **Tungsten Contact Points**
12. **Sliding Contact Action**
13. **Split Amber Operation**
14. **Positive Starting in Sub-Zero Temperatures**

Pats. Pend.

TERRITORY STILL OPEN FOR HIGH GRADE REPRESENTATIVES AND DISTRIBUTORS

THE AMERICAN CRUCIBLE PRODUCTS CO.
LORAIN, OHIO

Mixed-in-Place Road Construction

Mixed-in-place surfacing is a type of road construction midway between surface treating and penetration macadam and can be used over old pavements where the surface is not suitable for surface treatment, or on pavements which need a thicker bituminous surface than is furnished by surface treatment, but which do not justify the somewhat greater expense of a penetration pavement.

In preparing this type of surface with Tarmac, made by the American Tar Products Co., Koppers Building, Pittsburgh, Pa., the base should first be cleaned and holes patched, or, where necessary and practical, the road may be scarified, reshaped and rebound. Unless the base is a bituminous surface, it should be primed with 0.2 to 0.3-gallon of Tarmac P per square yard, after which coarse aggregate, ¼ to 1½ inches in size, is spread to uniform grade and a depth of 2 to 3 inches over the full width of the road.

The next step is to apply Tarmac P, preferably heated to 125 degrees Fahrenheit, at a rate of 0.4 to 0.6-gallon per square yard. The aggregate is then mixed by blading back and forth over the road with graders. If, after mixing, all aggregate is not completely coated with Tarmac, the mix should be spread over the full width of the road in a uniform layer and a second treatment of 0.2 to 0.3-gallon per square yard of Tarmac applied and the mixing continued until the aggregate is uniformly coated.

When the mix begins to stiffen, it should be spread in a uniform layer and smoothed with a multiple blade maintainer or long-base drag. The road should then be rolled thoroughly, adding 10 to 15 pounds of covering material per square yard to fill the voids lightly.

A seal coat of Tarmac P or Tarmac A is applied at a rate of 0.2 to 0.3-gallon per square yard, 20 to 25 pounds of covering material per square yard applied, and the road dragged and rolled.

BLADING TARMAC-COATED AGGREGATE INTO WINDROWS ON SIDE OF ROAD

Variations in the quality and sizing of local aggregate, weather conditions and the required depth of wearing course will, of course, make it necessary that each highway official adjust these recommendations to his local conditions, but this description may be termed "average procedure."

Use of Forms and Gaskets in Sewer Installation

In a recent installation of 8- to 24-inch vitrified clay pipe for a sanitary sewer in Homestead, Fla., all trenching was done in a very porous limestone rock formation through which water flows freely. As the average elevation of this city is only 8.5 feet above sea-level, approximately 80 per cent of the sewers were laid below sea-level and, as it was not possible to provide enough pumps along the trench banks to free the trench from water, some other method of protecting the joints had to be devised, according to E. L. Hook, Jr., City Engineer. The solution of the problem was found in the use of Weston forms and gaskets, made by L. A. Weston, Adams, Mass. After some experimenting it was found that a much tighter joint could be secured even in the small amount of dry work done, so they were used on the entire installation.

SEWER INSTALLATION IN HOMESTEAD, FLA., USING WESTON FORMS AND GASKETS

On the final test of the work, which extended for approximately 8 miles, it was found that, in spite of the water handicap and the fact that at least 50 per cent of the lines were constantly submerged in 4 or more feet of water, the infiltration was less than two-thirds the amount allowable for work done under ideal conditions.

These sewers have now been in operation for 3½ years, and to date there has not been a single stoppage of the pipe because of the roughness of the inside of the joint or from any other cause, and pumping costs have been kept low.

NISSLY TRAFFIC LINE MARKER

A Simple, Efficient Traffic Marker

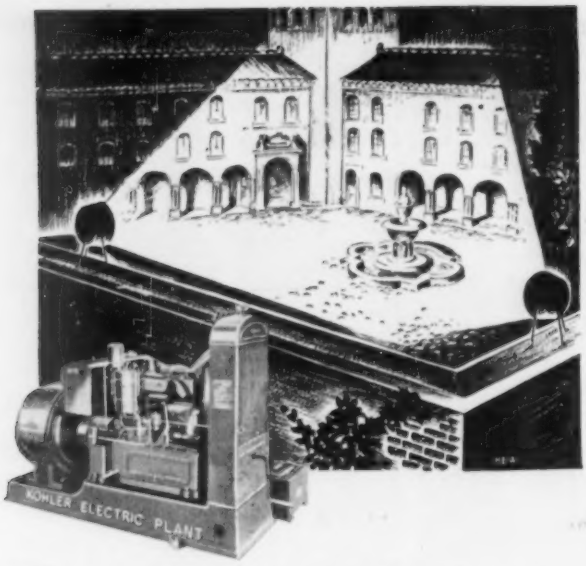
A new traffic line marker for concrete, brick, or macadam roads has been placed on the market by Walter S. Nissly, 43 North Clinton Street, York, Pa. This machine is so constructed that the applicator, which is on the side of the machine in full view of the operator, will remain plumb with the road surface so as to give good coverage and a straight-edge line. The applicator is made of aluminum, strung with a good quality of bristles that will withstand hard usage.

Any kind of paint may be used economically, the capacity of the paint tank being 7 gallons. The operating pressure required is only 6 to 8 pounds. This is obtained by 15 strokes of the pump, which is conveniently carried on the machine at all times, one filling of air being required to discharge one filling of paint. The tank is easily filled with paint through a large opening in the top with a simple but effective cap and clamp which allows quick removal and replacement and insures good pressure. Paint is released from the tank by turning the handle grips which govern the flow of paint.

The tank may be easily and quickly cleaned and unused paint discharged through the use of air pressure. The machine is mounted on adjustable, rubber-tired, ball-bearing wheels, and is equipped with funnel and pump.

Capt. A. I. Keegan Joins International Airports Corporation

The International Airports Corporation, 25 Broadway, New York, has announced that it has added to its staff as Vice-President and Business Manager, Capt. Adrian I. Keegan, who was formerly Chairman of the Membership Committee of the Brooklyn Chamber of Commerce. He has also been elected a Director of the corporation, which is actively engaged in the complete management, construction and operation of airports for a period of years throughout the United States. A $10,000,000 program is to be executed this year by the Corporation upon major air terminals on both the Atlantic and the Pacific Coast, as well as on several major interior ports.



Serving society...

A WELL-LIGHTED city wins the approval of its people. Bright streets are safer streets. Properly lighted public buildings reduce personal and property risks. Naturally, progressive administrations recognize the safety and sound sense of Kohler Electric Plants used for regular or emergency light and power.

An outstanding example is that of the Alabama State Prison Mill. Prisoners, working there during the night shift, frequently caused disturbance and damage to machinery during interruptions of the regular current. Then a Kohler Electric Plant was installed for emergency use, resulting in saving of time and prevention of trouble whenever the regular current fails.

Kohler Plants generate current at 110 volts or 220 volts A. C. or D. C. Capacities range from 800 watts to 10 K. W. They keep nights bright and safe in public buildings, auditoriums, parks, tourist camps and all other places in which the municipality is directly interested. They are compact, sturdy, self-contained and quickly installed. *No storage batteries necessary.*

Mail coupon for information specialized to your needs. Kohler Co. *Founded* 1873. Kohler, Wis.—*Shipping Point*, Sheboygan, Wis. — *Branches in principal cities.* . . . Manufacturers of Kohler Plumbing Fixtures.

KOHLER OF KOHLER

ELECTRIC PLANTS

KOHLER CO., Kohler, Wisconsin AC-7-30

Gentlemen: Please send catalog describing Kohler Electric Plants.

Name _____ *Street* _____

City _____ *State* _____

Use in which interested _____

AGA SIGNALS

TEN years ago the warning flashing signal was the only type of traffic equipment for which there was a demand.

From time to time as the requirements in this field broadened, additional products were found of value in correcting traffic conditions. During this period, A. G. A. has kept step with these changing conditions by frequent additions to its list of items handled.

Today A. G. A. has everything needed for traffic correction, including the following:

ELECTRIC SIGNALS

GAS BEACONS

ELECTRIC BEACONS

REFLECTOR SIGNALS

REFLECTOR SIGNS

PLAIN EMBOSSED SIGNS

STREET NAME SIGNS

STREET MARKERS

AUGUR POSTS

SECTIONAL POSTS

Write for catalog

AMERICAN GAS ACCUMULATOR CO.

ELIZABETH NEW JERSEY

MODEL "C" MOHAWK COMBINATION TOOL AND ASPHALT HEATER

Economical Asphalt Heaters

Two of the many advantages featured by the Hotstuf oil-burning asphalt heaters, made by the Mohawk Asphalt Heater Co., Schenectady, N. Y., are the distinct hot and cold chambers. The elevated melting chamber is separated from the lower storage chamber by a solid removable partition plate with an opening at the bottom, so that the cold material is distinctly separated from the hot material and it is possible to reload with cold asphalt without cooling that which has already been heated.

The patented elevated melting chamber eliminates coking by the natural flow of the hot material carrying the sediment to the storage chamber, where it is gradually carried off through the draw-off valve. Because of this heating principle, the manufacturer claims that the kettle has a 30 per cent greater melting capacity with a 30 per cent decrease in fuel required.

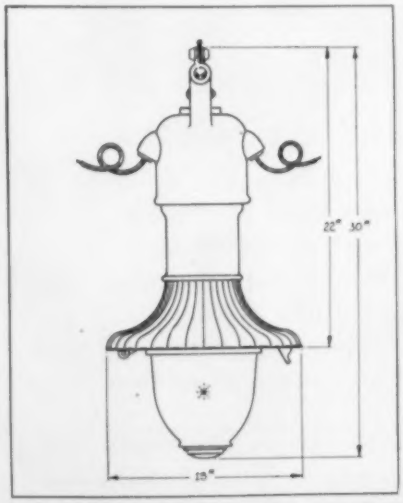
Orientating Cut-out Features Applied to High Lighting

A one-way orientating cut-out Multilux street-hood for highway lighting with either center suspension or mast-arm mounting when symmetric or asymmetric refractors are used, is now being made by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. This one-way orientating feature is especially desirable for use with either the two-way or the bilux refractor.

The demand for a self-containing lighting unit which may be safely lowered for cleaning or re-lamping without an interruption in the line circuit, has brought about the design of this unit. It is suitable for use on low-voltage series circuits below 1,000 volts employing 2,500 to 6,000-lumen lamps and for use with asymmetric refractors, as it is impossible to get out of position during operation.

The unit consists of three parts—the canopy, the skirt adapter and the skirt. The canopy and skirt adapter are made of cast aluminum covered with a high-grade green enamel paint. The skirt is of cast iron and is supplied with either a green paint or a porcelain enamel finish.

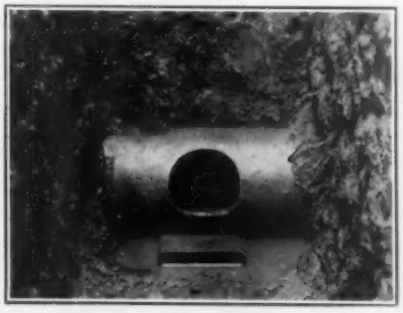
This street-hood embodies self-contained cut-out features, and a small number of parts of simple and sturdy design. All current carrying parts are nickel-plated, it is dust- and bug-proof, easy to service, and amply insulated.



WESTINGHOUSE MULTILUX STREET HOOD

Alvord, Burdick & Howson Move Offices

Alvord, Burdick & Howson, engineers, have announced the removal of their offices to Suite 1401-06, 20 North Wacker Drive, Chicago, Ill. This firm specializes in the preparation of investigations, reports, designs, estimates, plans and specifications for the construction and improvement of engineering works such as waterworks and water purification plants, flood relief projects, sewerage and sewage disposal works, appraisals, rate reports and power generation projects.



PIPE READY FOR INSTALLING M-D CUT-IN CONNECTION

A Cut-in Connection for Sewers

A light cast iron fitting with bell-and-spigot ends for connecting a house service with a main sewer pipe without the necessity of laying a Y-branch or T-branch in the sewer line, has been placed on the market by the Atlas Mineral Products Co., Mertztown, Pa.

The M-D cut-in connection is made for use with both terra cotta and concrete pipe sewers of all sizes and for house services of either terra cotta or cast iron pipe of various diameters. In using this connection, a hole of the proper size is cut in the sewer pipe at the required vertical angle, the spigot end of the fitting inserted, and a small amount of jute packed in the space between the spigot of the fitting and the rim of the hole in the sewer pipe. The cut-in fitting is held rigidly in place by surrounding the outside of the fitting as far as the base of the bell and the sewer pipe itself for a short distance on each side of the fitting with lean concrete or cement mortar applied with a trowel. There is a bead on the spigot end of the cut-in fitting which prevents the jute or concrete from entering the sewer pipe. The stops or wings on the side of the fitting allow the spigot end to enter the sewer pipe only so far as to be flush with the inner surface of the sewer and thus provide no obstruction to the flow of sewage. The spigot end of the cut-in fittings of the several sizes and types are so shaped as to fit neatly the inside surface of sewer pipes of various diameters.

M-D CUT-IN CONNECTION INSTALLED IN PIPE

Chicago Bridge and Iron Moves Atlanta Office

The Chicago Bridge & Iron Works, 37 West Van Buren Street, Chicago, Ill., has announced the removal of its Atlanta, Ga., office to the Rhodes-Haverty Building, where R. M. Campbell is in charge.

This company has also opened a new office in the Electric Bldg., Houston, Tex., which will be in charge of J. R. Donaldson, formerly in the Dallas office.

Changes in Okonite Personnel

Charles Edward Brown, Jr., for the past five years Manager of the Power and Light Department of the Chicago branch of the Okonite Co., 501 Fifth Avenue, New York, has been appointed Assistant to the General Manager of the company, with headquarters in New York.

Elbridge H. McNeill has been appointed Manager of the Power and Light Department of the Chicago branch to succeed Mr. Brown.

Yeomans Appoints New Representative

Yeomans Brothers Co., Chicago, Ill., has announced the appointment of the Hallett Engineering Co., 809 South Park Avenue, Springfield, Ill., to represent the company in that section of the state. P. G. Dolan will be in charge of the Springfield office. This company will handle the complete Yeomans line of sewage ejectors, bilge pumps, water-supply pumps, general-service pumps, condensation return pumps and rotary air-compressors.

Union Metal Moves Philadelphia Office

The Union Metal Mfg. Co., Canton, Ohio, has announced the removal of its Philadelphia office to 110 East 42nd Street, New York. E. B. Comfort, Eastern District Sales Manager at the Philadelphia office, will be located in the same suite with W. A. Daunt, New York Sales Manager for the company.

Are you interested in the mechanical application of tars and asphalts?—or the lighter binders and oils?—then ask for detailed information on

CHAMPION HEAVY-DUTY BITUMINOUS DISTRIBUTORS HEATER TYPE FOR ASPHALTS AND TARS

CHAMPION COLD APPLICATION DISTRIBUTORS FOR THE LIGHTER OILS PORTABLE TANK CAR HEATERS

The *Good Roads* Machinery Co. Inc.

KENNETT SQUARE, PA.

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New Answers to Pumping Problems

The REX PUMP BOOK tells a new story of value and efficiency for all contracting pumping jobs—from well-point systems to supplying a 27-E Paver—from pile-jetting to emptying a trench or manhole. If you're looking for new, efficient pumping—if you want the most pump your money can buy—

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ON ROAD WORK AND PICK-AND-SHOVEL JOBS

NELSON K-2 LOADER

Moves itself,—no dragging around.
Feeds itself,—no hand shoveling.
And one man runs it.

Does the work of twenty shovelers and never gets tired.

Low price. Economical to run and built to give years of service.

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